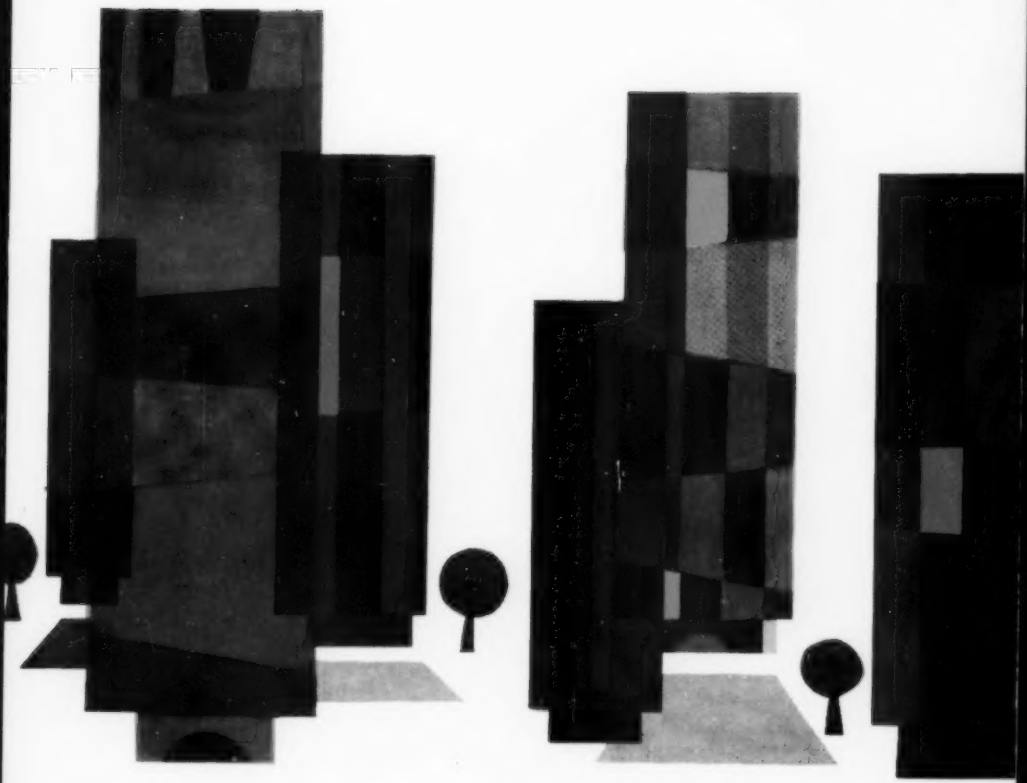
the month's best in business reading

- *digests*
- *features*
- *books*

MANAGEMENT REVIEW

NOVEMBER 1961



THE CORPORATE IMAGE—Shadow or Substance?

Profit Potential in the Developing Countries / When Computers Feed Back Problems

AMERICAN MANAGEMENT ASSOCIATION

Exploring industry's number one cost item . . .

MATERIAL

A Special AMA Conference

November 27-29, 1961 • Savoy-Hilton Hotel • New York

In most industrial companies, materials and components represent the largest cost of doing business. That's why so much of a company's forward progress is tied in with materials development and control—and why it is so important for a company to capitalize fully on the many new and unique materials that offer unusual potential in improved product performance and lower production costs.

This AMA Special Materials Conference will help you to arrive at an accurate, up-to-the-minute appraisal of material's role in your company's operations. Presentations—made by top executives in the materials field—will explore . . .

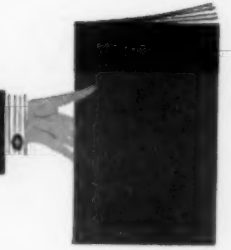
- ***The role of material in industry from the design engineering viewpoint***
- ***A new industry approach to a materials concept***
- ***Total materials control in the existing organization structure***
- ***Case studies in sound materials management in the electronics, chemical or process, and mass-production industries***
- ***Three case studies of material flow from the vendor through operations***

Other speakers will explain the application of the profit-center concept to managing materials. And one of two concurrent sessions will explore problems of pricing materials and components, while the other will examine methods of improving quality and reliability of materials.

This Special Conference is the first chance executives have had to get a comprehensive review of the total company involvement in materials—and to learn how materials can be managed as a profit-improvement factor. To insure your attendance, register now. Write, wire or phone Dept. M11, AMA, 1515 Broadway, New York 36, N.Y. Telephone JUdson 6-8100.

AMERICAN MANAGEMENT ASSOCIATION, INC.

IN THIS ISSUE



- **Shadow or Substance?** Concern about the grooming of the corporate image is giving rise to some false—and potentially dangerous—notions. In this month's opening feature, CLAIRE G. ELY discusses some of the things a company *must* deliver on—to its customers, its distributors, and its other "publics"—if its much sought-after image is to be more than an ephemeral one.

- **Mirror, Mirror . . .** A cartoon feature (page 11) that illustrates some of the ways in which the wrong kind of corporate image is created.

- **The Rich and the Poor.** In his article on page 32, ROBERT THEOBALD points out the importance to U.S. companies of investment now in the underdeveloped countries, whose position in world markets will change drastically in the years ahead.

- **Push-Button Problems.** What are the major problems that are cropping up in companies after three or four years of computer use? S. A. SPENCER (page 58) discusses duplications of costs and facilities, lack of tie-in with long-range company plans, the tendency to confine computerization to the departments in which it was originally introduced, and inadequate provision for providing top management with the information it needs to run the business.

— The Editors

NOVEMBER 1961
VOLUME 50, NO. 11

MANAGEMENT REVIEW

SPECIAL FEATURES

The Corporate Image—Shadow or Substance? ..... *Claire G. Ely* 4

Mirror, Mirror on the Wall ..... *Cartoon Feature* 11

Profit Potential in the Developing Countries ..... *Robert Theobald* 32

When Computers Feed Back Problems ..... *S. A. Spencer* 58

BUSINESS DIGESTS OF THE MONTH

A Product-Mix Approach to Fringe Benefits
Harvard Business Review 15

Corporate Christmas Gifts: A Survey of Company Practices
Sales Management 19

When a Manager Moves Up ..... *Nation's Business* 22

Ready-Made Programs for Computers ..... *Business Week* 25

Questions and Answers on Equal Employment Opportunities
Employee Relations Bulletin 28

Coming—Fresh Water from the Sea ..... *Steel* 42

HARWOOD F. MERRILL, *Editorial Director*
VIVIENNE MARQUIS, *Editor*
ROBERT F. GUDER, *Managing Editor*
PETER HAAS, *Digest Editor*
GRACE T. COMPTON, *Assistant Editor*
JULIET M. HALFORD, *Book Review Editor*

THE MONTH'S BEST IN BUSINESS READING

Modern Materials for Better Maintenance ..... *Mill & Factory* 45

"PERT" and "Critical Path": Management by Chart
The Wall Street Journal 49

The BLS: How It Affects American Business
Industrial Relations News 52

Getting the Best Results from Simulation ..... *Business Management* 55

Cutting Costs Through Streamlined Distribution ..... *Printers' Ink* 69

Packaging Decisions: How Purchasing Can Help
Consumer Packaging 73

Office Equipment: An Embarrassment of Riches
Dun's Review and Modern Industry 75

Training and Developing Professional Personnel
Personnel Policies Forum 78

DEPARTMENTS

Also Recommended: Summaries of Other Timely Articles 81

Survey of Books for Executives 86

COVER ART BY PAGEANT STUDIO

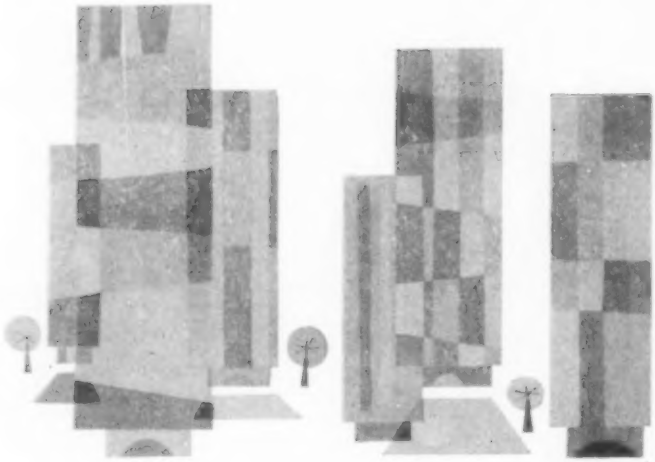
MANAGEMENT REVIEW is published monthly by the American Management Association, Inc., at 1 Sherman Avenue, Jersey City 7, N. J. Main offices at 1515 Broadway, Times Square, New York 36, N. Y. Form 3579 should be sent to 1515 Broadway, Times Square, New York 36, N. Y. Second class postage paid at Jersey City, N. J. Subscriptions: $7.50 per year (nonmembers, $12.50). Single copies: $1.00 (nonmembers $1.25). Volume 50, No. 11, November, 1961.

Changes of address should be forwarded to the publishers *six weeks in advance*, and postal zone numbers should be included in all addresses.

The American Management Association does not stand sponsor for views expressed by authors in articles issued in or as its publications.

An index to MANAGEMENT REVIEW is published annually with the December issue. The contents are also indexed in the Industrial Arts Index through December, 1957, and from January, 1958, in the Business Periodicals Index. MANAGEMENT REVIEW is microfilmed by University Microfilms. Ann Arbor, Mich.

Copyright © 1961 by American Management Association, Inc



The Corporate Image — Shadow or Substance?

■ **Claire G. Ely**
Marketing Vice-President
The Maytag Company

IN THE PAST FEW YEARS, "corporate image" has become a familiar term. Elaborate research programs have been conducted to determine what images companies and industries evoke in the minds of the public; scores of experts have offered their services to help corporations mold the images they desire; growing numbers of agencies have been employed to redesign corporate trademarks, identification signs, and letterheads; and countless articles have been written on the creation of a good corporate image.

Some of this activity has undoubtedly been to the good. But the effect of much of it has been

A MANAGEMENT REVIEW SPECIAL FEATURE

to foster the idea that corporate image-making is something apart from the day-to-day business of the company—something that is best left to experts who understand such ephemeral things and are privy to the secrets by which favorable "images" are formed.

Actually, of course, this is nonsense. You can't manufacture a corporate image, and you can't buy one. Building a favorable corporate image is a full-time job, and it cannot be done simply by spending money or by talking about it; it can be accomplished only through deeds.

People form their ideas about a corporation in the same way they form opinions about the people they know—on the basis of three factors: What does the company do? What does it say? What do other people say about it?

What Does the Company Do?

First of all, both dealers and the general public see the products we develop, produce, and sell. Our products are the bedrock upon which our reputations must stand—the basis of our image in the eyes of the public.

For the most part, the image that industry has created in the past on the basis of its products is a good one, and many individual corporations and industries can take pride in their product development. But in order to maintain this favorable image, we must continue to do certain things:

- *We must continue to develop meaningful and significant features for our products.* This does not mean just a new chrome strip, a new color, a new model number, or a new name. It means that our research and development facilities must continue to find new and better ways for our products to do the job that the consumer expects. When we put on the market a new product that can do a better job than any previous one, we have truly created a new market—we have honestly obsoleted the old product, and there is a real reason for the customer to buy. Good features mean a good image.

- *We must make every effort to manufacture products that are well designed and carefully built—products that will give long and dependable service with a minimum of maintenance expense.* Nothing makes the consumer any madder—or harms your corporate image any more—than a product that doesn't function the way it's supposed to, requires expensive and frequent repairs, or at worst, doesn't work at all!

In many industries, of course, products are becoming constantly more complex, are being made more automatic, and have more features added. This naturally increases the service potential, simply because there are more moving parts and the products are more complicated. But this is not an answer that manufacturers can blithely make to the

ultimate consumer. Consumers expect products to function properly —and to function properly for a long time with a minimum of maintenance expense. If we build our products to be dependable, we have a good image; if we do not, our image is justifiably unfavorable.

• *We must remember that, although the consumer may be attracted by less expensive merchandise, he does not want "cheap" merchandise.* Obviously, products must be sold in various price classes. Not everyone can afford to buy a Rolls Royce, even if we give him up to 36 months to pay. The man who buys a compact car doesn't expect it to have all the luxury features and equipment of a custom-built Rolls, but he does want it to be well built and dependable. If we expect the public to maintain a favorable image based on what they see us do, we must be sure that in our effort to provide lower-priced models we do not allow quality control to deteriorate. And we must make certain that we do not eliminate features that are basic for satisfactory performance.

People Are the Company

There are two other areas where what we do is vitally important—perhaps more so in terms of our dealer public than in terms of the general public. These areas are *people* and *programs*.

To the storeowner in Green Isle, Minnesota, your corporation is the man who sells him your products. If the man who call on dealers is a good representative of the company —if he is well trained, if he knows his product backward and forward, if he understands the market conditions in his territory, if he provides the dealer with helpful merchandising suggestions, if he is interested in the dealer's problems, if he is honest and never makes promises that he or the company cannot fulfill—then it goes without saying that the image of the company in the mind of the dealer is excellent. When the representative fails to exhibit any of these desirable qualities, the dealer's opinion of the manufacturer slips.

Recruiting and Training

We are judged in terms of the kind of people who represent our company to the dealer and to the public. It obviously follows that the care we exert in recruiting, selecting, and training the people in our organization will have a direct and measurable effect on the corporate image that is created in the minds of all those who see what we do.

This is nothing new, of course. Every sales manager knows that when he has a problem market one of the first things he has to do is to assign a top-notch man to try to get it back on the track. But when we stop talking about something as specific as a problem market and start talking about something as vague as a corporate image, we sometimes lose sight of the fact that a corpora-

tion is just a group of people working for a common goal. And there's nothing mysterious about the fact that people create impressions on other people. If we want a good image of our company, we need good people representing our company. It's that simple.

Merchandising Programs

Merchandising programs can also have an important bearing on the corporate image. In order to move the vast quantities of products we are able to produce today, we need merchandising programs. And the kind of program we develop has a bearing on the kind of image created by our company—certainly in the minds of our dealers, and often in the minds of the general public.

If our sole concern is to move vast quantities of merchandise from our assembly lines and warehouses into the hands of dealers and stop right there, then it's not surprising if the dealer gets disgusted with us and our image suffers.

If our programs are such that they cause dealers to overextend their credit—to buy more than they can sell or pay for—then we are directly contributing to their business problems, and again our image suffers.

If we indulge in questionable business practices with our dealers, we cannot expect them to create a favorable image for us.

For many companies, good business depends to a great extent on a sound dealer structure. When our dealers are successful, we are successful. But successful dealers cannot be developed with one call; it may take years. In addition to being good business, it creates a good corporate image when we continuously try to design and take to the dealer effective merchandising programs and effective retail sales promotional ideas that will help him to move our products at a profit.

What Does the Company Say?

As a corporation, we collectively speak to the public through various advertising media. The advertising about our products inevitably creates an impression in the minds of the public about our products and about our company. And if any industry allows itself to drift to the point where an agency of the federal government has to step in and penalize and regulate it because of "unfair advertising practices," the image of that industry and of the companies that comprise it will suffer.

Since people judge us, in part, by what they hear us say, we'd better pay pretty careful attention to our advertising. We should be honest. We should not make false claims nor deliberately try to create false impressions.

It is true that an effective ad must provide the prospective customer with a compelling reason to buy, and to buy *now*. But in view of the tremendous amount of research and development that has gone into the

products on the market today, and in view of the hundreds of attractive features that have been developed and included in the products that we offer for sale, does it not seem reasonable to suppose that industry can find more compelling reasons to buy than the fact that "a warehouse is overloaded" or that "a dealer needs more floor space"?

Time and time again, it has been demonstrated that the American people will pay for the things they want and consider important. The automobile industry, for example, found that a sizable segment of the

American public wanted a compact car that was cheaper to buy and cheaper to operate. So the automobile industry provided compact cars. At the same time, a sizable group of the American public wanted automatic transmissions, deluxe interiors, power brakes, and more powerful engines. At first these weren't available on compacts—apparently because the manufacturers thought that price was going to be the most important consideration. But they soon learned that compact-car buyers would willingly pay the extra money in order to get these features on their compacts. Can any industry afford to ignore this lesson?

Another aspect of the question of what people hear us say concerns the public pronouncements of the individuals associated with a corporation. What executives say in public inevitably colors in some respect the reaction of people to the corporations they represent. This is true every time an identifiable representative of any company speaks in public, and it underlines the importance of everything we say or do.

What Do Others Say?

If we've done everything else right, we probably don't have to worry about what other people say about us—it will be favorable. There is, however, one element that has much to do with what people say about any company: customer service.

It is an old adage that the satisfied customer is a product's best salesman. It is equally true that a dissatisfied customer can do considerable damage to the reputation of a product or of the company that produces it—in other words, he can create in his community the kind of image that no company wants.

Service Is an Asset

Manufacturers are very well aware of the fact that as they create more and more features, which the customer wants, and develop greater automaticity, which the customer wants, they also create the potential for more service problems —which the customer does *not* want. Even the most carefully built products will occasionally need adjustments and will occasionally need maintenance service.

There was a time when service was almost a dirty word in many industries. Fortunately, things are not quite so bad today. We have made giant strides in developing products that are more dependable and more service-free, and dealers have come to realize that their service operation can be a tremendous sales tool. Some are even offering warranties longer than those offered by the manufacturer!

Since most products are going to require service during their useful life, let's make service an asset—not a liability. If we want to create a better image, one way is to make sure that the comments people make about us are favorable.

We can't stop by simply making adequate service training available for our dealer organization; we must insist either that our dealers maintain a well-trained service staff or that they have a reputable servicing organization to take care of the products they sell.

But training is only part of the story. A servicing organization should be managed as efficiently as a sales organization. When, for example, a household appliance needs service, it needs it right then. No homemaker wants to wait five or six days to get her range, or her refrigerator, or her washer fixed. A well-trained and well-managed service organization can provide fast and efficient service. If service problems are quickly and correctly handled—if the customer is satisfied—it's simply good business. And it helps to create the favorable corporate image we seek.

A Full-Time Job

In short, then, if we want to build a good corporate image, we must closely scrutinize what we do, we must pay attention to what we say, and we must handle all aspects of our operations so that people are most likely to say favorable things about us. There is no secret formula. If we want to appear in a more favorable light in the eyes of the public, then we must *do* something about it:

- We must build quality products.
- We must develop features with strong customer appeal.
- We must build dependable products that require a minimum of maintenance.
- We must advertise our products honestly and effectively—on the basis of the merits we have built into them, not on the basis of price alone.
- We must develop a well-trained and successful dealer organization, and make it possible for our dealers to make a fair return on their investment in our products.
- We must see to it that when our customers have a service problem they can have it taken care of properly and quickly, wherever they may be.
- Most important of all—for this underlies every one of these other factors—we must see to it that the people in our organization are the best trained, the best qualified, and the *best* that we can possibly find.

It is not easy. It takes time to build a "good image." It takes hard work. Too often, the pressures of business make us put these things off for another day. But that is a big mistake.

The only way to build a better image is to work at it full time—all the time. A favorable image comes naturally when each of us does his job every day the way he knows is right. It comes naturally when we constantly follow the best business practices and maintain the highest standards. There is no other way. ♦

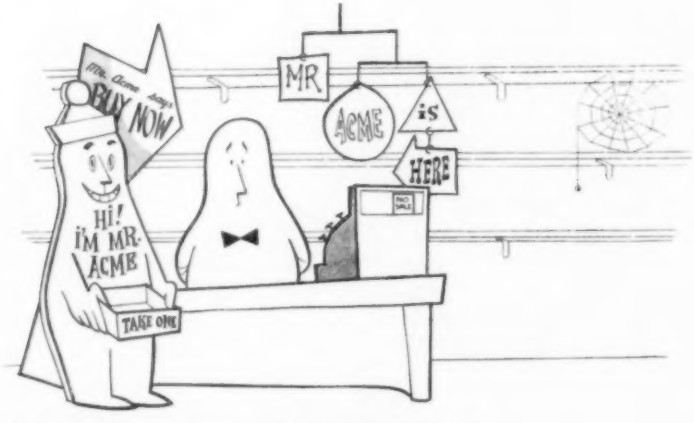
Mirror, Mirror on the Wall . . .

CRACKS IN THE CORPORATE IMAGE

Have you redesigned your letterhead, standardized your trademarks, and developed a snazzy new package for your products? If so, your corporate image is secure, and you can feel free to antagonize people in any or all of the following ways . . .

Jazz It Up. A strip of chrome or a useless "feature" may make people think it's a new and improved model—at least for a while.

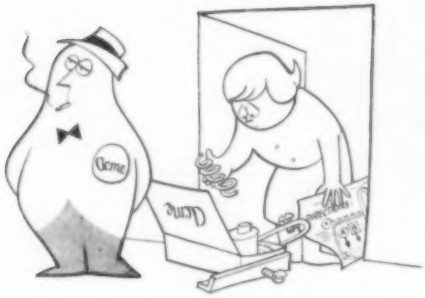
Forget About Repairs. Once they've bought your product, your responsibility ends. You can't be bothered stocking parts or training servicemen; if it doesn't work, let 'em buy a new one.



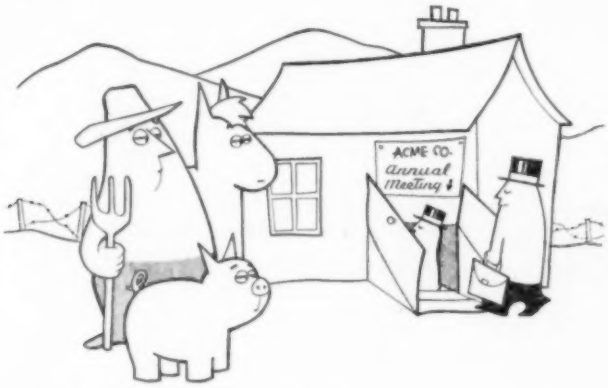
Let 'em Wait. As long as you provide enough display material, you don't have to worry about such details as keeping dealers in stock or making deliveries on time. If they want your product badly enough, they'll wait for it.

Ignore Complaints. Criticisms of your product's quality can be unsettling, so pay no attention to them. They usually come from cranks, anyway.

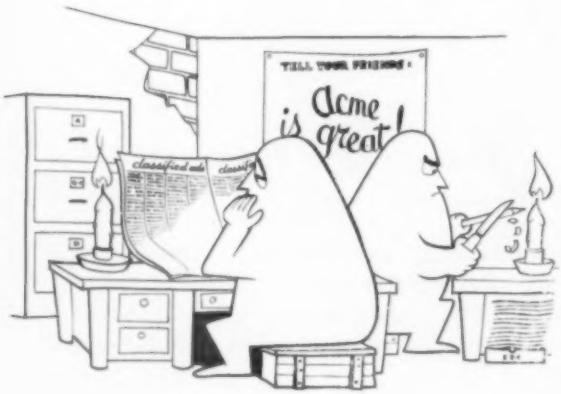
Scrimp on Service. If you drive your salesmen hard enough, they won't be able to give proper attention to their accounts, but they may be able to sign up enough new customers to offset those who take their business elsewhere.



Neglect Sales Training. Never mind developing courteous, attentive salespeople; if the product is good enough, it will sell itself.



Keep Stockholders in the Dark. The less they know, the less trouble they cause. All the information they need is in the annual report—which should, of course, be glossy, expensive, and designed to bear out the "look" you've planned for the company.



Disregard Employees. Don't worry about the opinions of your employees; the image of the company that they transmit is probably taken with a grain of salt, anyway.

■ *Drawings by* AL HORMEL

A Product-Mix Approach to FRINGE BENEFITS

By Joseph H. Foegen

Condensed from Harvard Business Review

MOST COMPANIES TODAY offer their employees some sort of a fringe-benefit package. In most cases, the package was put together in piecemeal fashion—and often at the initiative of a union. The time has come, however, for management to take an active and positive role in producing a planned package, based on what it thinks is best for the company and for its employees. To accomplish this task:

- Management should know why it is giving each fringe item.
- The cost of each item to the company should be determined.
- A logical package should be planned, giving the optimum return for the cost incurred.

No one who studies fringe benefits will deny their importance—economically, psychologically, and physically. Improved morale arising from the security offered by a pension plan, the relief of fatigue resulting from rest periods, and the sense of well-being involved in cleaning up at the plant and going home in fresh clothing are all well-known. In fact, human dignity almost demands consideration of some benefits as not "fringe" at all, in the sense of being unnecessary or undeserved. On the economic side, with fringe benefits ranging up to over 60 per cent of payroll, their importance can be denied even less.

The number and variety of fringe items are substantial. One authority lists 105 separate items, broken down into four categories: extra payments for time worked, payments for time not worked, payments for employment security, and payments for employee services. In another breakdown, the Chamber of Commerce, in apportioning the 21.8 per cent of payroll ascribed to fringe benefits, divides them into the following groupings: legally re-

Harvard Business Review (July-August, 1961). *© 1961 by the President and Fellows of Harvard College*

quired payments (employers' share only), 3.9 per cent; pension and other agreed-upon payments (employers' share only), 6.8 per cent; paid lunch, rest, wash-up time, and so on, 2.3 per cent; payments for time not worked, including vacations, 6.9 per cent; and other items, 1.9 per cent.

Obviously not all fringe items are of equal importance, either to the employers or to the employees. Some items, such as Social Security payments, are legally required of employers; not much can be done about them. Others, such as paid vacations, are strongly entrenched by custom. But when we get beyond these basic items, the possibility of eliminating, combining, adding, or rearranging some of the more "marginal" benefits becomes greater.

Just as a company has to decide on the proper mix of products that will maximize its long-range profits, so companies need to determine the proper mix of fringe benefits that will maximize employee satisfaction and assure efficient production.

Limited Leeway

The decision as to what policy to follow on each of the more than 100 fringe items is a difficult one to make. In some cases, management's leeway in combining fringe benefits is limited. If, for example, the industry is one in which many young women are employed, maternity leave would almost have to be included in the fringe package. If the plant is an isolated one or one that draws its labor force from a wide area or employs it at odd hours, an employee cafeteria would be a practical necessity. Another operation might demand some provision for cleaning up or for changing clothes.

Assembling the Facts

Assuming that sufficient leeway exists, a company's first major goal is assembling the facts it needs to arrive at its optimum fringe combination. The first step toward this goal is assembling basic cost data on all of the fringe items. This is admittedly a large order, since statistics in this area are not too plentiful. Some data are available, however, from the U.S. Department of Commerce, from management research organizations, and from the Chamber of Commerce. If local detail is wanted, a survey might be conducted for the purpose.

The second step would be to determine how much money is available to cover the cost of all fringe benefits for a given future period—for example, for the fiscal year, the period of the labor agreement, or some other convenient period. Basic labor-cost figures would have to be considered here, as well as estimated or budgeted costs in other operational areas, estimates of sales volume, and so on.

A third step would be to assign preference values to each fringe item. This necessitates devising

some sort of weighted numerical scale which takes into account three different considerations for each item:

- *Legal requirements.* If a fringe item is required by law, a maximum value must be assigned.
- *Employee preference.* The opinion survey is probably the most popular and in many respects the most practical method used here. However, other methods, such as the formal interview or even informal conversation, could be used, depending on the size of the firm.
- *Management preference.* Certain fringe items are, for various reasons, preferred by the firm.

Optimum Fringe Combination

The next major step in applying the product-mix approach would be to decide on the optimum combination of the various benefits. This phase is, of course, the crux of the whole issue. The decision requires judgment, not mathematical certainty. The person making the decision would consider all the various fringe items possible, the relative preference shown for each by both management and employees, the estimated cost of each, and the total amount of money available for the whole fringe package. Mentally weighing each factor, and balancing one against the other, the person or committee in charge would make the decision.

The decision-making process can be aided considerably by the use of some of the methods of operations research—particularly since many fringe items either are, or at least with some research can be, put in quantitative terms. Since cost and morale are always important, the use of probability models in trying out the various alternatives would be ideal here. Such models are relatively low in cost, and trying out alternatives in model form would minimize the adjustments which could adversely affect morale. The desirability of being right the first time is obvious.

Objections Raised

Three basic arguments are commonly raised against the application of operations-research techniques to fringe determinations:

- The area of fringe costs is still notorious for the lack of statistical information available. Not only are costs of specific items not known in many cases, but little is also known about the effects that individual fringe items have on turnover, morale, and productivity, or how employees balance fringe benefits against wage increases. In answer to this charge, however, management is now realizing, to an ever-increasing degree, the important part fringe benefits play in over-all costs, and is taking steps to secure the information.
- The judgment that management must make in ranking the various fringe items is certainly far from being scientific. And an opin-

ion survey, aside from being only a "snapshot" at one moment of time, is not much better. However, as true as these things are, corporate judgment is not limited to the area of fringe benefits; it is constantly being used in merit rating, economic forecasting, and so on. In fact, management's basic function is making considered judgments, based on many available facts.

• The charge is also made that the product-mix approach is static, good only for one moment of time, while business conditions are always changing. To a certain extent this is true. However, a static situation is already partially assured by the negotiated labor agreement: The parties are bound by the terms of the contract to certain provisions for the fringe package (barring reopening clauses) until the contract period expires. Therefore, this aspect of the business environment is at least relatively stable and allows the product-mix approach to be used. If the contract is long-term, so much the better.

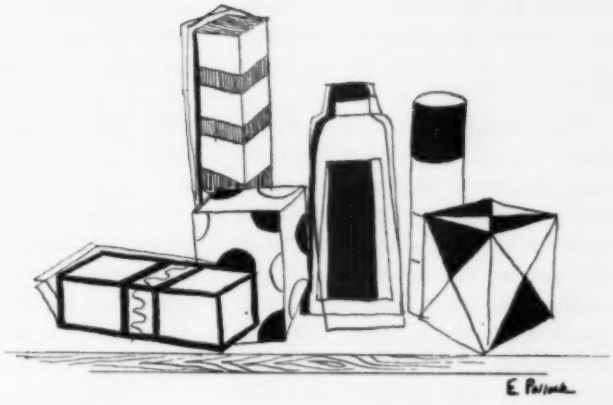
Wise managements would do well to ascertain whether, for their companies, an optimum fringe mix can be arrived at. If it can, a logical, objective, planned, integrated approach to the fringe package—rather than the haphazard, uncoordinated, passive one that has unfortunately been too often the case up till now—can do much to improve the long-run and even the short-run welfare of both workers and company. ♦

The Right to Question

AN EMPLOYEE'S PARTICIPATION in decision-making and his right to question company rules are essential in creating a healthy organization, states L. A. Petersen, board chairman of Otis Elevator Co., N.Y., in *Industrial Relations News*. Petersen believes that the future leaders of an organization are those individuals willing to think for themselves and to be governed by their own thoughts.

Petersen stresses that employees have the right to ask questions and be assured that they will receive reasonable and understandable answers. "In fact," he says, "an employee with management potential is certain to have an insatiable curiosity about everything relating to the company and its business—and he should be given wide latitude in asking legitimate questions."

Petersen concedes that a person with a consistent desire to understand the reasons for things can become a nuisance. But, he adds, the more people an organization has with a sense of curiosity, the greater its pool of leadership material.



Corporate Christmas Gifts:

A SURVEY OF COMPANY PRACTICES

Condensed from Sales Management

THE GIVING of Christmas gifts is "good, sound business," say 1207 marketing executives responding to *Sales Management* magazine's latest annual survey of corporate gift-giving. "We will spend as much, or more, on our corporate gift programs in 1961 as we did in 1960," say 88 per cent of the respondents. About 11 per cent plan cutbacks in spending, and less than 1 per cent plan to eliminate gift-giving this year.

Asked, "Did your 1960 practice represent a marked change from previous years?" a majority (84 per cent) said "no." There were, however, many indications of greater selectivity: Companies were more discriminating, both in preparing the list and in choosing the gifts. Approximately 60 per cent retained lists about the same size as 1959's; 22 per cent said theirs were smaller; 18 per cent said that their lists had grown. Although 19 per cent of the respondents had all customers—as well as all names possibly bearing on sales—included on the gift list, the sales volume of each account

Sales Management (September 10, 1961), Sales Management, Inc.

was the big factor with 46 per cent of the firms answering the survey.

Drawing the Line

One survey item in particular drew heavy response: "Charges have been made that corporate gift-giving represents bribery. Let's grant that a line should be drawn somewhere, but where? At about what dollar point does reasonable 'good will' giving leave off and commercial bribery begin?" A substantial 62 per cent of 624 executives responding indicate that a $10 maximum protects the giver from charges of undue influence.

In 1960, the average survey respondent spent $5434 on his corporate gift list—up slightly over the $5387 of 1959 and due mainly to a higher average price per gift. Each business gift given in '60 cost the donor an average of $8.82—an increase over the $5.79 average reported for '59. (The figures are not directly comparable because advertising novelties—more properly charged against all-year promotion—were not included as gifts in the later survey.) Over 71 per cent of all business gifts cost less than $10. The new survey indicates, however, that more companies than ever before—almost 24 per cent—gave remembrances costing from $10 to $25.

Merchandise gifts scored highest (69 per cent) among answers to the question, "If your company sent greetings to customers in the 1960 holiday period, what form did they take?" Cards were second with 54 per cent. "Nothing sent" accounted for 18 per cent of the responses, while calendars or advertising novelties were used by 17 per cent of the respondents. (Where figures exceed 100 per cent, more than one policy was followed.) A standard-brand item of high reputation and known value was chosen by 57 per cent, while 43 per cent felt that the novelty gift offered more mileage.

For Family or Office?

The majority of respondents—62 per cent—suggest the family-type gift, while 22 per cent indicate a preference for a gift the recipient can use personally away from the office. About 16 per cent prefer a gift strictly for office use.

Some companies describe the majority of their customers as retailers. "We have almost reached the conclusion," reports a sporting-goods manufacturer, "that our retail dealers do not want a personal gift. They would much rather have a giveaway bearing their imprint. We've supplied ours with a fishing calendar which has proved extremely popular year after year."

In recent years, the use of business-gift programs where local charities receive gifts in the name of the customer have enjoyed a modest growth. Writes a Midwest executive: "Several firms in my area have given to local hospitals or universities in behalf of their customers.

This type of gift, rather than the knick-knack kind, should be encouraged."

Other comments include this one from a Texas industrial-products marketer: "The most compliments we ever received came as a result of giving matched gifts from year to year. One year it might be serving trays; the next, salad bowls of the same material and then, perhaps, mixing bowls. This leaves the impression that we are interested in the account on a continuing basis."

"The gift should be tailored to the individual," notes a Detroit sales director. "For example, giving golf balls to a non-golfer is money wasted, and giving liquor to a non-drinker might actually cost you future business. We encourage our salesmen to schedule a special lunch date with good customers during the holiday season."

Identification

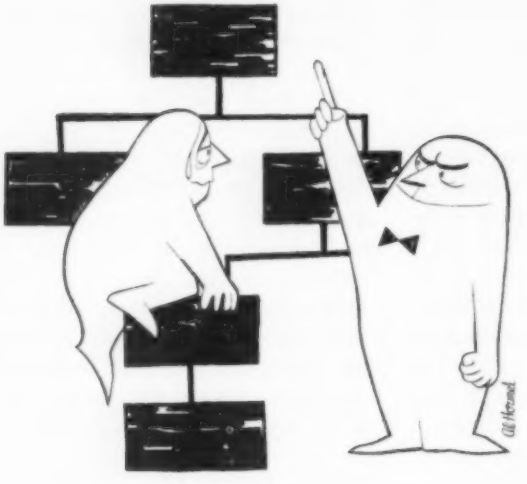
Undoubtedly, identification is one of the toughest problems encountered by the business-gift giver. Respondents were asked how the donor insures that the recipient realizes the source of the gift—especially during the hectic Christmas season. Out of over 500 answers, about 15 per cent of the companies say they imprint the gift with the company name. The company card is enclosed by 30 per cent of the firms, while a little over 8 per cent send along the salesman's card. Over 7 per cent use greeting cards and slightly under 7 per cent write personal notes to enclose with the gifts. Over 11 per cent take no chances and present the gift in person. Others give their own products with an identifying label; rely for identification on the fact that they've been sending the same gift for years; or send a separate letter advising of delivery of the gift—apparently enough warning to insure identification once the gift is opened. An eye-catching package, say many respondents, causes the recipient to pause and think about its sender.

May Employees Accept Gifts?

Do respondents permit employees to accept holiday remembrances of reasonable value from suppliers? The large majority, 76 per cent, do; only 24 per cent do not.

Respondents were asked if they had received requests from customers not to send gifts to their employees. Only 23 per cent indicated they had received many such requests. The majority—62 per cent—said a few had been received, certainly no indictment of the business gift. The remaining small percentage said no such notices had been received.

The business gift is good public relations and a sound business practice, say the majority of the survey respondents. "But," cautions the executive vice-president of an industrial-chemicals firm, "like anything else, it's simply a case of good judgment." ♦



When a Manager Moves Up

By Nathaniel Stewart

Condensed from Nation's Business

WHEN A MANAGER moves to a position of greater responsibility in the company, his proper orientation is an important first step toward assuring his success. The conventional formalities of introducing him to the organizational chart, his office location, his secretarial services, his key associates, and the whole gamut of personnel-department requirements may be necessary—but they are not enough.

There are changes in responsibilities, in mental skills to be used, in the use of executive time and effort, in realignment of relationships, and in the nature of teamwork at the new level. Good coaching of a manager by his superiors is a strong asset in easing his transition.

Proper orientation benefits both the manager and the organization. For the company, changing managers offers an opportunity to take

Nation's Business (August, 1961), © 1961 by Nation's Business—the Chamber of Commerce of the United States

stock of the unit involved; to change departmental habits that result in dissipation of energy, unproductive time and effort, and even serious misunderstandings; and to uncover possible envy or resentment among the manager's new associates who may feel that they were passed over and thus may subtly sabotage his efforts.

Orientation is primarily the job of two men: the line official who had the final voice in selecting the new manager and the boss for whom he will work. These two should be expected to set aside sufficient time both for face-to-face sessions with the man and for monitoring his induction. They should be willing to talk straight about past performance of the department, organizational planning under way, budgetary support, people and their relationships, and pending decisions that may affect the department. If a management consultant has looked over the company in recent years, pertinent information from this survey should be passed on.

Beneficial suggestions that have been put in cold storage should be brought to the new manager's attention. Appropriate reports, agenda and minutes of staff meetings, and special documents of interest should be made available.

Effective Presentation

An effective orientation presentation can be divided into three steps:

The big picture: This presents the company's objectives, plans, and expectations. It should portray the corporate sense of values, the public-relations image as seen by outsiders, and the internal image of the organization.

It should provide a perceptive presentation of the company's present and potential product lines, the nature of the competition in the industry, the progress in research and development (if this is applicable), and the company's profit position and what is needed to improve it.

It should also focus on shifting objectives, anticipated changes, and related matters. In summary, it should enable the new manager to understand the attitudes of top management and how it views the company's future.

The operational picture: This concerns the setting in which the new manager will operate, have access to information, make decisions, sell his ideas, consult with others, meet his own responsibilities, and contribute to the team effort.

The important questions of coordination and interoffice relations must be covered. His areas of responsibility should be spelled out, along with standards of performance, work plans and their completion, and how his progress is reviewed. This is also the time to cover delegation—its extent and the people involved.

In addition, this portion of the orientation reveals the frameworks of both the formal and informal or-

ganizations and their respective influences. Other information should relate to special problems of supervision, relationships with associates, and the status of morale and productivity of his unit.

The personal picture: Basically, this involves a frank and helpful presentation of how the man can grow on the job, avoid dead-ending, and measure up to the demands of his position in a way that will reflect well upon him.

Here attention is given to what the manager can do to make an effective transition from his former job to the new one, ways to bolster his self-confidence, and pointers on how to use his time effectively so that he can meet priorities and deadlines. It provides the basis for discussion and counsel on how to deal with conflicts and pressures.

Additional Pointers

A good presentation should try to show the new man how he can best measure up to the standards expected of him and also derive some enjoyment from the new position. He should be cautioned that, while he may have overcome certain blind spots in his former job, he may develop new ones now. He should be advised how to counteract new hazards. Moreover, some attention should be given to how he can find time to think—about the job, about improving relationships, about management improvement, and about innovations in his unit. Particularly vital is letting him know where he can get more counsel and guidance if and when he needs it.

Follow-Up

A positive program should have an element of follow-up. There should be some provision for the executive coaches to keep in close touch with the new manager to determine how things are going, how his staff meetings are coming along, and where the boss or the company can help.

Review of the administrative manual may be necessary because of complex situations facing the department. Executives should make some mental index of the manager's mistakes and their consequences, as well as how speedily the mistakes are undone to the extent practicable. Controls on his performance should be relaxed at first but tightened up as he gains experience.

For all this, there is still much that the new manager will have to discover for himself—such matters as crossing lines of authority, problem employees, backlogs of work not readily visible, deadwood, line-and-staff rivalries, and communication breakdowns.

The new manager may find few or none of these problems; the whole setup may be favorable, and he may be inheriting a good situation from his predecessor. In a well-managed company this will often occur. But the probing and stock-taking must nevertheless be done. ♦

Ready-Made Programs for Computers

Condensed from Business Week

COBOL, ALGOL, GECOM, and SURE. These names identify only a few of a growing number of powerful aids for management, manufacturing, engineering, and science. They are computer programs, the complex instructions that direct electronic computers. Their purpose: to make the task of using computers simpler and less costly.

In the jargon of the data-processing world, computer programs are called "software" to distinguish them from "hardware," the actual physical equipment of data-processing. "Hardware" includes the computer itself and its tape transports, printers, card punchers, automatic typewriters, and other accessories. In comparison, a computer program is relatively "soft"—in the sense that it exists on a reel of magnetic tape or a deck of punched cards, and is easily altered.

An unprogramed computer is merely an immensely complicated electronic network. It's useless until a programer loads the machine's magnetic memory with a systematic code that organizes its behavior. Then the computer becomes a highly specialized tool, "custom engineered" to do a particular job economically. But each job it's to do requires a special program to "redesign" its logic.

Fortunately, programs are retained on reels of tape or on decks of punch cards, and can be used over again. But they cost a lot. One insurance company, for example, figured that its programing costs exceeded one million dollars when it switched several years ago from hand and punched-card accounting to computers. Today, the same programing job could probably be done for much less, thanks to the newer "software packages" of programing aids that come with computers, plus the hundreds of programs and routines developed by users and made available through mutually maintained program libraries.

Reprinted from Business Week (September 23, 1961), by special permission; © 1961 by McGraw-Hill Publishing Co., Inc.

Computer manufacturers attach increasing importance to software. Their programing departments, for example, are expanding fast. Recently, Minneapolis-Honeywell Regulator Co.'s Electronic Data Processing Div. gave its automatic-programing group equal status with engineering, manufacturing, and marketing divisions. Radio Corp. of America's programing group occupies a whole building of its own. International Business Machines Corp. now has 1200 computer programers—all but 200 working on automatic programing systems for industrial, scientific, and military use.

Program Libraries

Many manufacturers also maintain libraries of computer programs. IBM's is the biggest, containing some 3275 programs. Some of these programs are huge, with up to 120,000 instructions—like AUTOPROMT, a program for directing numerically controlled machine tools in the cutting of three-dimensional parts. Other programs are short—like one for finding square roots. IBM's library service, which is currently shipping out programs at the rate of five million cards a month, is expensive—not to its users, for whom it's free, but to IBM. Its budget is already over one million dollars a year.

Computer manufacturers aren't the only source of software. There are 26 or more computer-user groups, run by and for computer users, that collect and distribute programs developed by members. Usually, these groups are only loosely affiliated with computer makers.

User groups accomplish two main purposes. First, any member gets access to a great deal of programing done by other members, thus saving much duplication. Then, computer programs, no matter how skillfully put together, usually have some bugs. If several companies or scientific groups use a program, the defects can be found and corrected.

Major Categories

Computer software generally falls into one of three major categories: subroutines, applications programs, and compilers.

Subroutines are ready-made sets of computer instructions for doing a specific part of a job—for example, finding square roots, establishing a print-out format, or sorting data.

Applications programs are ready-made computer programs that are relatively complete. Some represent general management problems common to all industry, such as linear programing, sales forecasting, scheduling complex projects, and balancing production lines. Others are more closely tailored to a specific industry—for example, IBM's SURE program, for customer billing by electric and gas utilities.

Compilers are master programs that enable a computer to write its own program from fairly general

instructions. A programmer need not tell a compiler all the steps for an operation; all that's needed is an algebraic notation. This signals the computer to generate a machine-language program for the operation. A scientist familiar with the notation of an algebraic compiler, for example, can virtually write his own program, though knowing nothing of the details of machine-language programing.

The net result of all this software production is a host of business short cuts. But even compilers aren't the last step. Technicians must still state the problem in detail, in algebraic programing or programing English. Some computer experts predict that a scientist will be able to present the data and the general problem, and the computer will figure out how to find a solution and write a program.

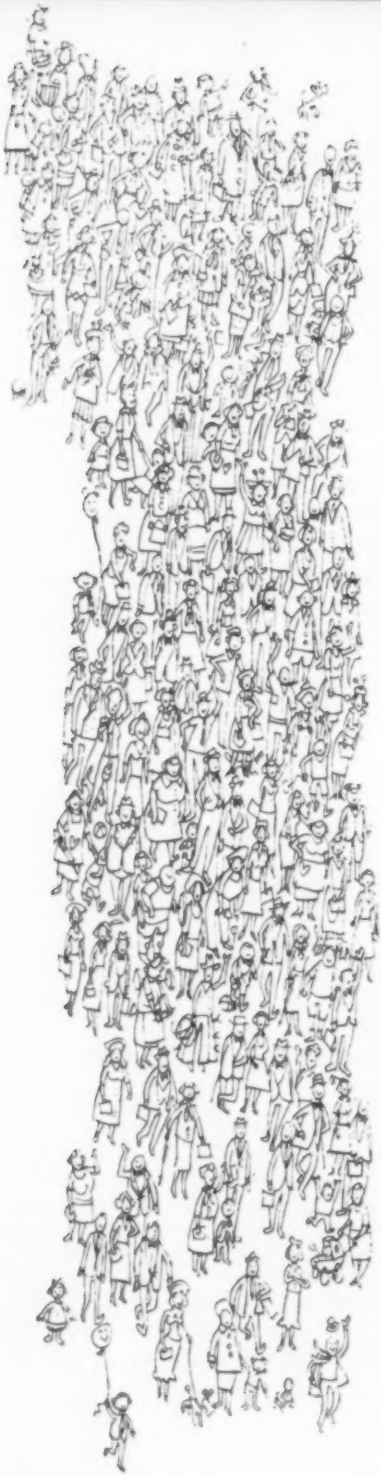
Even if such a super-compiler comes, however, that doesn't mean companies will be run by computers. No matter how skillfully they are programed, computers will merely provide industry with better, more timely information to be used for management's decisions. ♦

Organizational Purchases of U.S. Savings Bonds

MANY PEOPLE commonly assume that the purchase of U.S. Savings Bonds is restricted to individuals. However, in 1958 the government relaxed regulations to permit business concerns, associations, clubs, unions, credit unions —all types of organizations except commercial banks—to buy a limited amount of Savings Bonds: $10,000 in H Bonds and $7,500 purchase price in E Bonds. Each organization may buy the limit for itself and for every fund it maintains for a separate purpose.

Companies and associations that are buying the bonds cite these advantages:

- A favorable return—2½ per cent the first year and a half, then 4 per cent to maturity, an average of 3¾ per cent compounded semiannually.
- No risk and no fluctuation; investment and interest guaranteed by the U.S. Treasury.
- Almost immediate liquidity without penalty: After the first two months, E Bonds can be redeemed immediately at the company's bank. Interest is paid on H Bonds semiannually by Treasury check. H Bonds are redeemable at par any time after six months, on one calendar month's written notice.
- Corporate purchase of E and H Bonds backs local and state Savings Bonds volunteers in their selling efforts, and supports a uniquely stabilizing influence on the nation's monetary and fiscal affairs.



Questions and Answers

on

EQUAL EMPLOYMENT OPPORTUNITIES

Condensed from
Employee Relations Bulletin

ANTIDISCRIMINATION compliance forms are now required of all prime contractors and many subcontractors doing business with the government. The President's Committee on Equal Employment Opportunity has begun to distribute these forms to industry, along with certain rules and regulations. However, so far there are no standards or guidelines for management to follow. Thus a company could, with the best of

Employee Relations Bulletin (September 13, 1961). © 1961 by Prentice-Hall, Inc.

motives, set up a policy it believes to be equitable, only to find later that it does not comply.

Nevertheless, certain questions can be answered now. These will serve as a starting point for companies that work, or will work, on government contracts and must get their personnel policies into line with the new regulations.

Contract Requirements

Executive Order 10925 requires that certain government contracts contain a standard nondiscrimination clause. Which contracts are these?

All prime contractors and first-tier subcontractors must include in their contracts with the government Section 301, outlining a broad-based, nondiscriminatory policy, unless the contract is exempt under the committee's regulations. In addition, they must include the same clause in every subcontract or purchase order made in connection with the contract.

For example, an airplane manufacturer receives a contract for a new type of jet from the government. The prime contractor subcontracts out for wheels and tires. This first-tier contractor must include the antibias clause in his contract. Should the first-tier contractor subcontract out the tires for the wheel, then the tire manufacturer must agree to the clause. However, the tire company's subcontract for products for the tire does not have to contain the clause unless specifically directed by the contracting agency or the executive vice-chairman of the committee.

Assuring Nondiscrimination

Compliance reports will require prime contractors to agree to certain personnel measures and to perform specific tasks. Generally, what will these include?

Within thirty days of being awarded a government contract, the prime contractor will have to file a report stating that he will not discriminate against any employee or applicant because of race, creed, color, or national origin. He will have to assure that he does not discriminate in hiring, upgrading, demotion, or transfer; recruitment and recruitment advertising; layoff or termination; pay rates or benefits; or selection for training, including apprenticeship. The company will have to post in conspicuous places notices containing the provisions of the nondiscrimination clause.

The regulations are very specific on recruitment advertising. Ads must do one of the following to bring a contractor into compliance:

- State expressly that all qualified applicants will receive consideration for employment without regard to race, creed, color, or national origin.
- Include appropriate insignia prescribed by the committee.
- Group a single advertisement with others under a caption which

clearly states that all employers in the group assure all qualified applicants equal consideration for employment.

- Include the phrase "an equal opportunity employer" in clearly distinguishable type.

Unionized Companies

What if the contractor's employees are represented by a union? Are there any additional requirements?

In the compliance report, the contractor will have to give information on union practices and policies affecting compliance. Should the union refuse to give him these data, the employer will note this in his report as well as outline what steps he took to get the material. In addition, the contractor must notify the union that he has complied. The notice, provided by the government, must be posted for all employees to see.

The committee may require that the contractor, when bidding for a contract, file a written statement (signed by an authorized representative of the union he deals with or believes he may deal with) supporting the union's nondiscriminatory policy. The union in its statement should agree to cooperate with the company's antibias policy or consent to employment terms that will be in accordance with the Executive Order.

Must a subcontractor also file compliance reports?

Yes, but the burden rests with the prime contractor. He must have his first-tier subcontractors complete compliance reports within thirty days after the subcontract is awarded. The prime contractor then forwards them to the government agency responsible for the original award. The unionized subcontractor must include the same kind of information about his labor organization as the prime contractor does.

Certain Exemptions

The committee has stated that certain exemptions to the regulations will be permitted. What are these?

Exemptions will be permitted for:

- Transactions under $10,000 (other than government bills of lading).
- Any combination of subcontracts by a subcontractor under the same contract that do not exceed $50,000 in total or $10,000 each.
- Contracts performed outside the U.S. where there has been no recruitment of workers within the U.S. (No part of the work done in the U.S. is exempt.)
- Standard commercial supplies and raw materials, unless the committee's executive vice-chairman issues a special order.

Under special circumstances "in the national interest" the committee's executive vice-chairman may exempt a government agency from including the nondiscrimination clause in a contract.

Can an employer comply without having to fill out forms periodically?

Although the committee has not stated how frequently compliance forms will be required, it has been authorized to award U.S. Government Certificates of Merit to employers whose personnel and employment practices conform to the order. Then the company would not have to submit compliance reports. It would merely notify the contracting agency of its status by giving the certificate number. Certificates may also be awarded to unions. Certificates may be revoked, however, if the committee feels the organization is violating the order.

Where does a company go for further information and possible help on specific policies?

The committee currently has headquarters in the Department of Labor Building in Washington. Letters may be addressed: The President's Committee on Equal Employment Opportunity, Washington 25, D.C.

Puzzling Policies

One of the biggest unanswered questions is whether or not the committee has subpoena powers. The Executive Order authorizes the committee to investigate employment practices of any contractor or subcontractor and requires employers to permit access to their books, records, and accounts. Committee spokesmen believe legal interpretation will be needed to determine whether this power embraces the right to issue subpoenas.

The National Association of Manufacturers' law department has pointed out some other areas of concern to management:

- The regulations for hearing procedures do not afford an opportunity for a hearing as a matter of right before sanctions are imposed, except when ineligibility is contemplated.
- There is no provision preventing sanctions from being enforced if noncompliance is forced on a contractor by a labor union with which he has a bargaining agreement.
- No procedures are outlined for handling contracts that are canceled because of violation of the order.
- Conflicts between state fair-employment-practice laws—which forbid the keeping of records showing race, creed, color, or national origin—and requirements the committee may impose for statistical reporting have not been resolved.
- Should a company become involved in litigation as a result of action taken at the direction of a contracting agency, the only added protection it has is to request that the government enter the litigation "to protect the interest of the United States."

These questions will undoubtedly be answered in time—but not without the expenditure of a tremendous amount of manpower and possibly considerable litigation. ♦

Profit Potential in the Developing Countries

■ Robert Theobald

MOST FIRMS are ignoring the profit potential in the developing countries. This is the opinion of a very large proportion of those who have examined this question; an increasing number of people, in fact, claim that American business is incapable of coming to grips with the problems of these areas.

After extensive research, Richard D. Robinson reached this conclusion: "Most American managements . . . summarily reject all foreign opportunities without considering the loss through inaction of possible profits. Such closed minds, I found, generally precluded any serious investigation, any careful weigh-

A MANAGEMENT REVIEW SPECIAL FEATURE

ing of overseas business opportunities, any analysis of foreign markets."

These are harsh statements, but there is unfortunately much evidence to support them. The flow of funds into Asia and Africa remains negligible in comparison with the potential. New United States private investment in Latin America for 1960 is estimated at less than half of U.S. investment there during 1959 and only about one-sixth of its investment in the admittedly exceptional peak year of 1957. In many countries, the amount of profits remitted home by American firms is larger than new capital flowing in from the United States.

Distrust of U.S. Business

Many American firms have given the nationals of foreign countries little cause to accept or trust them in the past. Although there is now evidence of a more enlightened attitude, among both old-line companies and newcomers to the field, it must never be forgotten that many countries have good reason to detest some firms that tried to "rule" the countries in which they located, bringing almost any pressure to bear in order to insure that their wishes were carried out. Although private enterprise is generally accepted in the developed countries as a good way of raising over-all living standards, it is regarded by the consumer in many of the developing countries as a way of gouging him. The foreign company often faces a further problem: Many in the poor countries feel that the major advantage from carrying out business goes to the foreign stockholder rather than to the local population.

It is worth looking at five problem areas that Charles E. Allen listed in a speech before the Business Council for International Understanding. He suggested that the following feelings exist fairly generally when American corporations are present abroad:

1. The general fear that large and aggressive American corporations are displacing and eventually will take over domestic industries.

2. The suspicion that U.S. companies are exploiting the economies of other countries for the benefit of American management and stockholders rather than for local employees and citizens.

3. The feeling that U.S. companies exert political influence for preserving the *status quo*, and thereby frustrate popular demands for economic and social progress.

4. The resentment about high-pressure U.S. business methods, especially in some forms of consumer advertising and sales promotion, which foreigners fear is vulgarizing popular tastes and "Americanizing" their traditional cultures.

Economist Robert Theobald is the author of *The Rich and The Poor* (1960) and *The Challenge of Abundance* (1961), both published by Clarkson N. Potter, Inc. This article is based on information collected for an AMA Research Report, which is scheduled for January 1962 publication.

5. The widespread criticism that many U.S. companies and their personnel do not assimilate well with foreign communities—that most Americans sent abroad do not understand or appreciate local customs, do not know or try to learn the language, and remain aloof from the local community.

In the face of these formidable obstacles to operation abroad, it might seem natural for many firms to turn their back on the possibility of setting up operations overseas. Nevertheless, such a course may undermine the position of the company and lessen the chances for the survival of freedom throughout the world.

New Sales Opportunities

There are relatively few fields in which business and economic theory agree, but one of them is that profit comes from identifying new sales opportunities as they arise and benefiting from them before they are seized by other companies. It is therefore all the more surprising that an examination of business history suggests that most companies have been unwilling to recognize the potential from radically new areas of production and sales and have changed their approach only when decreasing opportunities in their own field *forced* them to do so.

It is within this framework of past inability to recognize new profit possibilities that the failure to seize the potential from overseas operation gains its full significance. Raphael Hodgson and Michael Michaelis stated the present position quite clearly in a recent *Harvard Business Review* article:

> There is no doubt that the internationalizing of U.S. companies will soon be one of the most important trends in business and, for that matter, in the economic development of the world. Its implications are as important for small and medium-size companies as for large ones—indeed, perhaps even more important. For if only the large firms become international, the extra advantages they gain may make them an overwhelming threat to competitors who do not make the move. In other words, what is today a business opportunity may tomorrow become a condition of company survival.

Supply and Demand

What is the evidence for this point of view? Profitable operation depends in large part on the demand for goods keeping ahead of supply, for in this situation prices can be raised when necessary to preserve profits. The potential supply in America has risen consistently more rapidly than demand in recent years. As a result, a considerable degree of surplus capacity has remained, even through the peak of booms, and unemployment has shown a tendency to rise. Mainly as a result of this failure of demand to grow as rapidly as supply, absolute profits in the boom year 1959-1960 were not significantly higher than those in the boom years of 1950-1951 and 1955-1956. Since Gross National Product has risen

significantly, this means that the percentage of profit has fallen. The margin on sales is down from 6.6 per cent in 1947-1950 to less than 5 per cent in the 1956-1959 period, and the share of profits in income produced by corporations is down from more than 15 per cent to around 10 per cent.

Examination of future trends suggests that supply will continue to increase more rapidly than demand in the United States in coming years unless there is military mobilization or major social change—such as a very rapid decline in hours of work or a major step toward equalizing the distribution of income, both of which appear, at the present time, to be unlikely. It has been estimated by Arno H. Johnson that the probable increase in production for personal consumption alone in the next ten years would be about 181 billion dollars. He illustrates how this relates to past rates of growth: "In the *30 years* from 1929 to 1959 we added $175 billion to total personal consumption (in 1959 prices) . . . [Thus] we must add as much to consumption in the next *ten* years as in the previous *thirty* years if we are to keep up with minimum estimates of our production growth."

Diminishing Returns

The mere fact that business is likely to find that supply will grow faster than demand in the decade of the 1960's is not, of course, sufficient to prove that firms should move into the developing countries. Many would hold that it would be better to try to increase domestic consumer demand for the products of the firm by spending larger sums on research and development, advertising, or packaging, and perhaps even by deliberately limiting product lives. But these techniques have met with serious problems in recent years. For example, firms in many product areas are failing to gain distributable profits from research and development as the excess of receipts over past costs is eaten up by the need for further research and development. In other areas, consumers react less certainly to increased expenditure on packaging and advertising; there seems to be more search for basic values. Finally, many companies have concluded that the annual model change and the search for rapid obsolescence is likely to improve their competitors' position rather than their own.

Increasing Competition

The degree of market saturation for many past "growth" products is also a factor cutting down prospects for a rapid increase in over-all demand. It is little recognized, for example, that the percentage of households owning a car has hardly risen in the last decade, fluctuating between 73 and 75 per cent since 1950, and that the number of households owning two or more cars has only risen from 9 to 13 per cent

during the same period. The percentage of households owning a television set is now also reaching a practical maximum.

None of this, of course, suggests that there is no growth potential for any type of company in America; this would be palpably ridiculous. It does suggest, however, that there will be increasing competition to make a sale, and that available alternative selling possibilities will become more attractive as the cost of making sales tends to rise.

Many firms, following this reasoning, have set up subsidiaries in Europe. The markets of the countries in the Common Market and the Free Trade Area appear attractive, because they are growing rapidly and have a long way to go before they reach material standards comparable with those of the United States. However, the very rapid in-

"Is it possible to ask for a raise without being drawn into a discussion of my potential and my actual performance?"

crease in European industrial capacity is already leading to fears of overexpansion in some lines and to consequent fiercer competition and lower profit margins. Profits in some lines of production in European countries are, in fact, currently lower than those in America.

The Developing Countries

This brings us by a series of steps —oversimplified of necessity, because of restriction of space—to consider the potential of the developing countries. From one angle, expansion in these countries appears highly attractive because their inhabitants would be willing to purchase a wide range of additional goods if they could afford them. This is true both for government and industry, which wish to buy more investment goods, and also for individuals, who wish to buy more consumption goods. The problem from the point of view of the American businessman is that, although there is willingness to buy goods, there is insufficient money. The consequent limitation of demand is often considered an insurmountable barrier to setting up factories in these countries.

One can hardly fail to be struck by the relationship of the problems of the rich and the poor countries. The increased demand that the American businessman needs if he is to sell his available goods can be found in the developing countries—and, conversely, the additional supply needed to limit poverty in the developing countries can be found in the rich ones. This suggests the need for a thorough examination of international economic policies to see whether a better dovetailing of needs and resources cannot be developed. Some changes are already taking place through the pressure of economic forces; e.g., longer and longer credit terms are made available as firms and governments are willing to make greater concessions in order to be able to sell their goods.

Existing Opportunities

The individual businessman, however, must work within the economic framework that exists. To what extent is money available to pay for the goods he could produce? There are few, if any, countries in the world today where the desire for economic growth and the rising expectations of the population have not set up demands for certain products that would be most efficiently satisfied by production within the country. Brief discussions with officials of the developing countries, or U.S. government agencies, soon turn up major investment possibilities.

Further, if the process of growth could be started in these countries, it would result in an increase in demand that would dwarf anything that can be expected in the West, simply because of the size of the population and the present low

standard of living. The underdeveloped non-Communist countries contain more than half the world's people, and the needs to be satisfied are enormous, for the inhabitants want to move toward the standards that have been developed in the West.

Business and Social Engineering

It is, of course, true that the ability of private enterprise to sell large quantities of goods in the developing countries in the long run will depend on working out methods that will put purchasing power in the hands of people who want to buy goods. The system used in the West seems unlikely to be fully effective in the countries now developing, because new industry tends to use the most modern equipment available, which is capital-intensive and produces few jobs. Even in Puerto Rico, where the industrialization program has been very successful, unemployment has not decreased. The pattern is considerably worse in countries without Puerto Rico's advantages; a recent report of the International Labor Organization shows increasing unemployment in many of the developing countries studied.

If business is to sell goods in the developing countries, therefore, it will have to collaborate in new "social engineering" that will put purchasing power in the hands of those willing to buy goods. It can, of course, be objected that social engineering is not part of the role of business, but this is to undervalue the past role of business within the countries now developed. A recent report of the Committee for Economic Development put it this way: "We sometimes tend to regard our own progress as identical with the long-continued, rapid growth of total output and income in the United States. But no less remarkable, and probably more important in frustrating prophecies of the decline of American capitalism, has been the wide sharing of incomes and of independence and security. This has been partly the by-product of economic growth, but it has also been the result of deliberate efforts, private and public, to create this situation."

Risk and Necessity

Despite the potential for sales in the developing countries, many businesses reject the possibility of investment on the grounds that it is too risky. This is very often only a rationalization, which is used to excuse the firm's unwillingness to examine the potential from an investment. However, it also reflects a fundamental difference in the attitude toward overseas investment and investment in America. In point of fact, there are few projects that can be proved to be economically justifiable on their own; for example, there can be little certainty that any given research or development project will pay off. But once a company has accepted

the proposition that investment in research and development is necessary for its survival, it is willing to risk money in this over-all field. Because most companies are not yet convinced that investment in the developing countries is necessary, they continue to argue that the degree of risk is so large that the possibility of failure is too great to be acceptable. The same argument would lead to the rejection of many domestic proposals that are vital to a company's survival.

Guarantee Programs

The risk from investment in the developing countries is actually far lower than is generally believed. The developing countries and the United States have passed a series of measures that make it possible for companies to invest with a minimum of risk. The American government has decided that private enterprise in the developing countries merits major support. As a recent article in the *Foreign Commerce Weekly* states: "Being convinced of the importance of foreign private investment in the pursuit of our goal of economic development of the less developed countries, we in the Federal Government have mobilized all available resources to advance the expansion of our foreign investment in these countries. This has required the development of new tools and the adaptation of older, more traditional tools."

Wide guarantee programs have been developed to allow the United States government to limit the risks that business assumes as it goes into the developing countries. Before the passage of the 1962 aid bill, the programs of the International Cooperation Administration provided guarantees against currency inconvertibility, expropriation or confiscation, or loss by reason of war. Additional guarantees were available under the Development Loan Fund for loans, sales, or corporate investments. The 1962 aid bill amalgamates these two programs and further expands them by allowing coverage under certain circumstances of part of the ordinary business risks incurred in operating in the developing countries.

Cash and Competition

The developing countries are also eager to attract business, and they will go to great lengths to assist new industries in establishing themselves. Many of the developing countries are willing to limit the degree of foreign and local competition that a firm setting up in their country will have to face. Many of them will reduce or eliminate the corporate tax load over an initial period ranging up to ten years, or even longer. Some of them will cooperate with companies in training labor and minimizing the high setting-up costs involved in a new operation.

In addition, the developing countries are often able and willing to

"The decisions of private enterprise will not only determine whether it takes advantage of the profits potentially available . . . [they] will be important in determining the world balance of forces. . ."

• • •

provide capital for firms that locate within their borders. Some of these countries will help a new company through loans or through renting completed buildings (often in previously constructed industrial estates). In addition, there are development banks in many of these countries that channel funds borrowed in both the developed and developing countries into private-enterprise schemes.

The Wider Issues

The decisions of private enterprise will not only determine whether it takes advantage of the profits potentially available from the developing countries; it now appears likely that the actions of individual businessmen will be important in determining the world balance of forces. The West has successfully convinced many of the developing countries that private enterprise has great potential for economic progress. These countries have therefore adopted laws designed to attract private enterprise, and in the process have changed many of their institutions and ideas.

Unfortunately, there seems to be little doubt that American business is limiting its commitments in the face of fears induced by nationalization in Cuba and unrest elsewhere in the world. Many businessmen are either unaware of the guarantee programs proposed by the United States and other governments or unwilling to put their trust in them. The results of this attitude can be serious. If, at the end of a trial period, the poorer countries find that private companies are unwilling to invest, they may well become disenchanted and look for another system of social organization that will permit them to achieve the growth they desire. The failure of private enterprise to meet these possibilities would force an ever-increasing degree of government intervention in economies both at home and abroad—and this would be likely to lead to the destruction of freedom as we have known it.

Terms and Conditions

Private enterprise, however, will benefit neither itself nor the developing countries unless it under-

stands and accepts the conditions that the developing countries feel are essential if they are to gain benefits from the operations of foreign firms. Almost all the developing countries believe that the foreign firm has an obligation to train both local labor and local management to take over operations in the factory in due course. In addition, most nations now feel that the maximum possible opportunity should be given to nationals of their country to invest in any companies that have been set up by foreign capital within their country.

Finally, governments in these countries often place considerable stress on the need for investments to reduce imports and to increase exports, because one of the most crucial problems of these countries is their inability to pay for the imports so desperately needed.

Private enterprise cannot avoid its responsibility for helping to solve the increasingly overwhelming need for economic growth if it wishes to preserve a climate in which it can operate. However, it can only be successful if it imaginatively adapts the methods used in the rich countries to the very different conditions of the poor. ♦

Coming—Fresh Water from the Sea

Condensed from Steel

IN A CHICAGO SUBURB, a housewife gets a mere trickle from her faucet; in Texas, a rancher squints nervously at vultures hovering over his water-starved cattle; in southern California, an entire family is hospitalized with hepatitis—they drank from a polluted stream.

Such occurrences are symptomatic of the growing shortage of fresh water in the U.S. In some areas, the problem is still fifteen or twenty years away, but in others it is urgent now. During 1957, for example, one thousand U.S. communities were forced to restrict the use of water.

Many possible solutions to the water problem are being explored: underground storage, education in conservation, effective controls over poilution, methods for reuse, reclamation of sewage, evaporation control, and even artificial rain-making.

But the most potent long-range solution appears to be the conversion of salt water into fresh water. Technological advances toward this solution are on the verge of stimulating the birth of a giant new industry.

Already more than one hundred U.S. organizations, as well as many groups abroad, are busy doing research, developing processes, and designing, building, and operating plants for water desalinization. At least five million dollars are being spent this year in the U.S. on research and development alone.

The pace of these efforts has been spurred by a recent report of the

Steel (August 7, 1961), © 1961 by The Penton Publishing Co.

House Committee on Science and Astronautics, which declared:

"It is likely that the U.S. will be the first of the . . . technologically advanced nations to find itself in real difficulty due to fresh water shortages; that this difficulty will materialize as much as ten years earlier than the 1980 date set by most prognosticators—that is, by 1970 or before—and that the nature of our water needs will be severe enough to make the conversion of salt water a major commercial venture within fifteen or twenty years."

Market Predictions

Predictions of the market for desalted water vary widely. Westinghouse, for example, estimates the market at 300 million gallons daily by 1970, 600 million by 1975, and one billion gallons daily by 1980. But the House committee's forecast is far higher:

"Within fifteen years, it is estimated that there will be markets for at least 100 billion gallons of converted water per day, and that during the interim, ten billion to twenty billion dollars will have to be expended on new conversion plants."

A combination of trends is responsible for the increasing strain on our present water resources: a rapidly growing population, a high standard of living that depends on the lavish use of water, steady industrial expansion that not only requires more water but tends to pollute existing resources, and the aridity of a large part of the country.

Booming use of water-consuming products—automatic dishwashers and washing machines, garbage disposers, and home swimming pools—is giving a strong upward push to figures on water use. In 1900, the nation used 40 billion gallons daily. Now it's around 320 billion gallons and by 1980, the Interior Department says, it will be 600 billion.

Large as it is, the U.S. market for desalinization may well be dwarfed by the export market. Sixty of the one hundred underdeveloped countries associated with the United Nations suffer from water shortages that can probably be solved only by salt-water conversion. On more than one-third of the earth's land surface, people seldom see a raindrop.

Strategic Position

Thus the U.S. is in a strategic position to fill a vital need throughout the world. Since the majority of nations need water to cultivate their land, feed their industries, and raise the living standards of their people, cheap methods of producing fresh water would be a dramatic contribution.

Salt-water conversion has been a growing industry since the 1940's. One pioneer company has built more than 4000 units—many for use on ships. Another firm has in-

stalled a conversion plant in Kuwait with a daily capacity of over five million gallons.

At least five companies are developing individual household units. One firm is already on the market with a machine that will convert 500 gallons per day.

Federal funds are spurring the technology of salt-water conversion. The Office of Saline Water has been given ten million dollars for research and the same amount for the construction of demonstration plants. Researchers are working on such problems as corrosion, heat transfer, scale prevention and removal, and the chemistry of water.

Practical salt-water conversion will mean the opportunity to reclaim lost areas for agriculture and to attract industry into new regions. Communities that are now stifled by water shortages will be able to grow. Industry will have more locations available, the necessary water for new processes, and a giant market for equipment around the world. ♦

Museum Exhibits: Industry's Soft Sell

A $175,000 EXHIBIT was recently opened by Union Carbide Corp. at Chicago's Museum of Science & Industry, reports *Business Week*. And, like other industrial exhibits at the museum, it scarcely bears a trace of the company name.

By museum rules, the company can't use advertising slogans in its exhibit spaces, nor can it give anything away. Even the demonstrators who operate the exhibit's fascinating maze of scientific gear work for the museum, not for the company.

Despite such restrictions, dozens of major corporations are spending millions of dollars this year building displays filled with pushbuttons, levers, and dials for the country's handful of science-and-industry museums.

The fifty major exhibits at the Chicago Museum of Science & Industry represent outlays of up to one million dollars by such companies as General Motors Corp., International Harvester Co., Radio Corp. of America, International Business Machines Corp., Swift & Co., Commonwealth Edison Co., and the Santa Fe Railroad. Other companies similarly provide exhibits for Philadelphia's Franklin Institute, the Boston Museum of Science, Pittsburgh's Buhl Planetarium, and the California Museum of Science & Industry in Los Angeles.

The major benefits to corporate exhibitors include plenty of exposure and the opportunity for some low-key image-building. But there are other advantages. Union Carbide, for example, invited local stockholders to the Chicago museum for a look at company progress. And Swift & Co. used a color shot of its exhibit to illustrate an annual report. Another benefit, although a slight one, is the chance to do some preliminary work aimed at recruiting younger museum visitors for jobs sometime in the future.

Modern Materials for Better Maintenance

By George Berkwitt
Condensed from Mill & Factory

TO HELP INDUSTRY keep its plants and equipment in top operating condition, manufacturers are now producing many thousands of maintenance materials designed for fast, inexpensive, and easy use. With the right maintenance material, a company can slash expensive down time, eliminate danger spots, and improve working conditions. At the same time, it can assure that a repaired or serviced area is as good—if not better—than it was when new. Following are some of the maintenance materials now on the market.

Gaskets and Sealing Materials

Conventional rubber, leather, and asbestos gaskets and packings are still as popular as ever. But new materials—many of them combined with traditional materials to attain special properties—are being introduced regularly. Among the most popular new materials are plastics such as polyethylene and the fluorocarbon resins.

Fluorocarbon resins offer a higher degree of chemical resistance, better electrical properties, and more freedom from friction than probably any other plastic. Furthermore, they are completely weather resistant, absorb little or no moisture, and remain stable within a temperature range of more than 900° F. Some compounds can be used continuously at temperatures up to 500° F. The new materials are now available in most standard forms and in a variety of ready-made packings, gaskets, and seals. They're also available in loose fiber for packing.

Also available are specially designed gaskets and packings built by manufacturers to customer specifications. Many are combinations of materials such as spring metals and rubber, gasketing materials built into fittings, and others designed for extreme or unusual appli-

Mill & Factory (September, 1961), © 1961 by Conover-Mast Publications, Inc.

cations. Liquid and paste sealing compounds provide a fast way to make seals in all kinds of piping and openings. Compounds range from hardware grade "pipe dopes" to special epoxies.

Patching Compounds

Today's patching materials assure patches in floors, walls, and ceilings as good as, and often better than, the base materials. Some are tailor-made to resist chemicals, streaming water, oils, and other elements. The newer compounds include:

Concrete-patching materials. Now on the market is a latex-based patching compound that hardens into a tight, nonshrinking, self-curing bond. The area to be filled has to be cleaned, but not chipped. One compound—a dry mix—offers a high tensile strength (1100 pounds per square inch) and a compressive strength of 4600 pounds per square inch. This mix bonds with concrete, steel, ceramic, brick, and glass.

Another compound stops seepage or running water through concrete in less than three minutes. Also available are concrete patching materials for floors that expand and contract, for areas between concrete sections, and for many other conditions. Asphalt-based patching compounds, of which there are many, are easy to apply and provide a high degree of sealing power. Some resist weather conditions ranging from extreme dampness to temperatures from —20° F. to 100° F.

Floor-patching materials. Many concrete patching compounds can be used on floors. However, some are compounded specifically for use on heavily traveled plant floors. One —a plastic-based material—sets immediately so traffic can roll as soon as the repair is completed, sets further as trucks and workers' feet compress it more, and may be used on any type of floor including asphalt, concrete, and wood. Some of the toughest, most durable floor-patching compounds contain epoxies.

Because there's such a variety of patching compounds, it's best to select one that fulfills these requirements:

- It will bond permanently with the material being patched.
- It will stand up under the conditions imposed regularly on the patched area. For example, a roof patch should be able to withstand summer heat, winter cold, and extreme dampness. A floor patch in a machine shop should resist heavy loads, oils, abrasion, vibration, and impact.
- It will not harden or spoil in storage. Many patching compounds come ready-mixed and in large containers. It should be possible to store the unused compound so it can be used later.

Glazing Materials

Good maintenance of windows and skylights can do a lot to improve working conditions. Broken

windows, for example, offset some of the benefits of air conditioning and heating systems. The wrong glazing material can either cut off light or increase heat and glare. Safety is another major consideration: Where explosions can occur, flying glass may be extremely dangerous.

Among the newer glazing materials are tints (including liquid-plastic coatings that cut glare as much as 95 per cent and won't chip, crack, or peel); safer glasses (tempered or laminated); solid plastics (which resist flying pieces, pressure, and chipping); and fiber glass.

Coatings and Finishes

Flooring materials range from anti-slip compounds to wood-floor preservatives. Typical of the great variety of materials available for industrial floors are:

- An epoxy resin which can be sprayed or spread on a concrete floor to give it a high degree of resistance to acid, abrasion, and impact.
- A water-absorbent hardener containing iron aggregates and cement-dispersing agents. It seeps into the surface of the cement floor, oxidizes, and expands to produce a hard, wear-resistant finish.
- A variety of anti-slip coatings to provide more traction for mobile equipment and to prevent accidents to personnel.
- Clear, urethane finishes that give heavily traveled wood floors 100 per cent to 200 per cent more wearability and gloss life than many fine varnishes.

Roofing materials include:

- A hurricane-proof roof coating that seals down roofing shingles so well that they easily resist winds up to 150 miles per hour.
- A fast-growing variety of aluminum coatings, many suitable for use on exterior or interior walls and on roofs. Aluminum roof coatings offer several advantages: pleasing appearance, insulation both for underlying roof materials and plant interiors, good bonding, and extremely easy application.

Heat-resistant coatings (some of them silicone-based) are now available for use in temperatures up to 1000° F. Their major advantages are that they can be applied to hot surfaces, resist chemicals as well as heat, and add to both the appearance and life of normally hard-to-maintain areas.

Water-resistant coatings are available in a wide variety of colors and types. Many are tough, easy-to-wash enamels; others are flat, penetrating finishes—for example, a crystal-clear, silicone-resin finish that penetrates deep into masonry walls and creates a moisture barrier. Some provide extra advantages like resistance to damage by constant heavy abrasion or immersion in water. Many can be applied to masonry, wood, metal, and other materials.

Safety paints are now used widely

in industry to point up location of safety buttons, aisle limits, thresholds, explosive areas, and mobile equipment such as moving lift trucks and crane hooks. Fluorescent paints are about four times more visible than standard safety finishes. Still popular, however, are the many highly visible, extremely durable traffic paints used on pavements and plant aisles.

Tapes

In keeping with the need for fast, efficient maintenance, manufacturers of tapes have created many new types, including:

- Combination rubber-and-friction tapes for one-shot electrical splicing.
- Pressure-sensitive tapes in different colors that comply with ASA Pipe Coding Standards. The tapes are used for color-coding piping.
- Moisture- and heat-resistant tapes to wrap around pipes for insulation and protection and, in many cases, to stop accumulation of water due to condensation.

Noise and Vibration Supressors

These include a large variety of acoustical tiles, machine mounts, and sound-absorbing backup materials, as well as:

- A heavy liquid coating that may be sprayed or painted on ductwork, piping, machines, and other units to absorb vibration and noise. On one test, an undamped unit vibrated ten times faster at resonance than the coated specimen.
- A specially designed mat with equally spaced blind holes on both sides. The holes act as suction cups that keep both the equipment and the mat from crawling.
- Tapes, fabrics, and sheets made of lead and other materials that may be cut to size and attached to vibrating enclosures, doors, ducts, and partitions. ♦

The Danger of Low Turnover

COMPANIES that push for ever lower turnover figures may be asking for stagnation, according to a study by the Association of Casualty & Surety Companies of New York.

Low turnover figures can mean trouble when they are caused by overaged staffs, incompetent employees who lack outside opportunities, or supervisors' hesitancy to fire. A certain amount of turnover is desirable, says the study, to inject new blood into the organization, to refine the quality of the staff by weeding out the inefficient, to measure the quality of recruiting efforts, and to check the quality of general supervision.

The survey was conducted among the 52 member companies of the Association, and covered about 100,000 employees.

—*Engineering Employment Practices Newsletter*

"PERT" and "Critical Path": MANAGEMENT BY CHART

By Norman C. Miller, Jr.

Condensed from The Wall Street Journal

A NOVEL SYSTEM of management, designed to help executives keep tabs on complex projects, is being put to use by an increasing number of companies.

It is known by two names. In defense work, it is called PERT (Program Evaluation and Review Technique); in other fields, it is known as the Critical Path method. Both are designed to pinpoint the key jobs in a multistage industrial operation and to point up possible solutions when trouble looms.

PERT plays an important role at Lockheed Aircraft Corp.'s Missile and Space division in Sunnyvale, Calif. There, in a "management information center" patterned after a military command post, Lockheed plots development progress on advanced versions of the Polaris missile, for which it is prime contractor.

Complex charts, bewildering at

The Wall Street Journal (August 16, 1961), © 1961 by Dow Jones & Company, Inc.

first sight, cover the walls. In seemingly haphazard fashion, each chart is splattered with hundreds of colored circles, connected by a maze of crisscrossing arrows. But to the Lockheed managers the story is clear.

Each circle represents one step in building the advanced Polaris. White circles are steps on schedule; orange ones are those in danger of falling behind schedule; red ones are those behind schedule. Each arrow connects interdependent steps. Together the charts form a "map" for managers that shows all segments of Polaris progress and indicates which jobs need priority attention.

Principles

The principles of PERT and the Critical Path method are simple. A typical Critical Path method outline guided the construction of a chemical plant consisting of five production units and a pump station. Six charts were drawn up, one for each section; then the charts were linked together to form a composite picture of the total plant. At this point, engineers had to rearrange some of the work to eliminate construction conflicts where work was scheduled in adjacent areas simultaneously.

When all the kinks revealed in the composite chart were ironed out, the project was divided into 180 jobs, represented as circles, with relationships between jobs indicated by 267 arrows. To figure the length of the project, engineers assigned time estimates to each of the arrows linking the circles. Then the time of the longest sequence of arrows was computed to arrive at the estimated project-completion time. The longest sequence is called the "critical path," because a delay in the jobs along this path would necessarily delay completion of the entire project. All other jobs, about 90 per cent of the total, could be delayed for varying amounts of time without slowing down the whole project.

Pinpointing Problems

Complicated projects like this often are delayed simply because it is difficult to keep abreast of progress in all parts of the program. Bar charts and graphs, traditionally used to depict progress, have one major flaw, say managers: They don't point up the cause of delays. PERT helps overcome this obstacle. One major Navy contractor tells, for example, how PERT revealed at an early date that a seemingly unimportant item—the delivery of special cable connectors—was becoming critical for development tests in a missile program. The supplier reported that it couldn't meet its delivery deadline and wasn't interested in expediting such a small item. Armed with a PERT analysis, the contractor was able to persuade high Navy officials and the Small Business Administration to press successfully for timely delivery of

the connectors. Without PERT, the potential delay probably wouldn't have come to the attention of top officials until it was too late to remedy it, says a Navy official.

Frequently the map system reveals that previous plans didn't show timing conflicts among parts of a multistage project. A construction company analyzed an office-building plan, using the Critical Path method, and found that under its first plan a cafeteria was scheduled for completion while construction hoists were still passing through it.

Managers have discovered that the effects of decisions can be simulated in advance within the framework of the systems. Programmers first feed data from the integrated plan into a computer; if a change in the plan is proposed, the computer evaluates its effect on all other parts of the project and reports its analysis to a manager.

Forecasting Alternatives

At Aerojet-General Corp., for instance, development work on the Polaris II missile was being slowed because fibrous-glass motor casings weren't ready. The Polaris I, which then was in final development, uses heavier steel casings. On a computer, Aerojet simulated the effect of taking some steel casings from the first Polaris program to use them for experimental firings of the second missile while the company awaited delivery of the new casings. The computer accurately predicted that the switch wouldn't affect Polaris I development and would speed up work on Polaris II by three months.

PERT works the same way as the Critical Path except in the way time estimates are determined. Because PERT is used mainly in development work where time schedules are less certain, technicians make three estimates instead of one for completion of their work: optimistic, most likely, and pessimistic. These three estimates are statistically related to derive the most probable estimate for specific jobs.

Lower-Level Charts

In the tremendously complex programs PERT is normally applied to, the manager's map could get so unwieldly that it would be almost useless. In the Minuteman program, for example, the Air Force will have to keep tabs on at least 10,000 jobs; if these were depicted by circles about one inch in diameter, a single chart some 16 feet high and 75 feet long would be required. To keep from getting lost in such a maze, managers construct PERT charts in several levels of detail. Behind each step on major charts are subcharts, diagraming key elements of that step and its relation to others. When reports reveal that elements of major steps are heading into trouble, then managers along the line consult lower-level charts to decide how to correct problems. ♦

The BLS: How It Affects American Business

Condensed from Industrial Relations News

FEW NONLEGISLATIVE organizations in the U.S. have as much influence on business and government affairs as the Bureau of Labor Statistics, a division of the U.S. Department of Labor. Wages of more than a million workers are contractually tied to the BLS Consumer Price Index, commonly called the "Cost of Living" index. The Bureau's employment figures have touched off waves of change in government spending and fiscal policy. Although its work affects virtually every household and place of business in the nation, many executives aren't fully aware of just what the Bureau of Labor Statistics does or of the value of its services.

The BLS is nonpartisan—but this doesn't protect it from criticism. Some critics complain it doesn't do enough analytical work and concentrates too heavily on gathering statistics. A few even question the validity of its statistics—and in at least one case, concerning productivity figures for the steel industry in 1959, the critics were right. This proved especially embarrassing since the numbers were being relied on during delicate contract negotiations. And right now, there are rumblings of criticism about the unemployment figures compiled by the BLS from monthly Census Bureau surveys.

The Bureau's Services

Despite the scattering of complaints, the BLS statistics and studies are among the most respected in the U.S. The Bureau's services fall into six broad categories:

The *Division of Manpower & Employment Statistics* gathers and publishes data on labor-force employment and earnings. Its monthly surveys of employment cover 35,000 households, visited personally by 550 Census Bureau workers. This provides an important over-all

Industrial Relations News (September, 1961), Industrial Relations Newsletter, Inc.

economic indicator as well as a measure of the potential labor supply (classified by occupation, age, sex, marital status, and color). The division each month also collects data based on mail surveys of 180,000 business establishments, and breaks the results down by industry, state, and metropolitan area. These figures often guide management in the placing of new industrial plants and are used extensively in marketing studies.

Hours and earnings are checked every month through mail questionnaires to 170,000 places of business representing 360 industries. These figures are used in wage negotiations and to adjust labor costs in accordance with escalator clauses of long-term union contracts. More than 30,000 firms are queried on the subject of labor turnover. This set of statistics, broken down by industry, sex, state, and area, is used as a yardstick for individual plant performance.

Occupational Trends

The division's occupational outlook program provides basic information on occupational trends for vocational-guidance counselors and personnel-department specialists. A handbook, published every two years and updated quarterly, describes in detail 600 occupations: the employment outlook, character of the work, training required, where jobs are located, and earnings and working conditions. About eight times a year, special labor-force reports are put out, based on questions added to the schedule used for the monthly employment interviews. These are used in studying the changing character of various occupations in terms of population groups.

Labor Abroad

The *Division of Foreign Labor Conditions* covers the labor scene abroad. It gathers data in foreign countries on wages, trade-union developments, and changes in labor law—information that U.S. management finds useful in planning and managing overseas operations, and for marketing studies on sales abroad. The division prepares many confidential reports for other government agencies; these are used to help set U.S. foreign policy, especially where it affects foreign labor.

The division will determine, for example, whether a certain foreign strike is caused by the strikers' aspirations for better wages and working conditions, or is politically motivated. In many countries, unions are the only organized groups, and it's important to know why certain actions are taken.

Perhaps the best known of BLS' statistics is the monthly Consumer Price Index, compiled by the *Division of Prices & Cost of Living*. This index measures price trends, based on expenditures of some 8000 wage and clerical workers' families, for about 300 items. It measures real

earnings and is used as a criterion for wage escalation in union contracts. The division also checks income, expenditures, and changes in financial status of about 9200 consumer units (families and single consumers) in 66 cities and reports results as they become available. These figures are important to companies seeking labor and marketing data, to union representatives, and to government policy makers. This division also publishes a daily list of market prices and trends for 34 commodities, as well as monthly wholesale-price and trend figures for 2300 products and commodities, individually and by groups.

The *Division of Productivity & Technological Developments* publishes annual studies of output per man-hour that determine manpower requirements in many industries and help management forecast costs and prices. Automation studies guide companies in efficiently introducing automatic equipment. The division also studies labor requirements in the construction field, to help government policy-makers determine potential effects of public-works programs.

The *Division of Wages & Industrial Relations* turns out a vast array of studies. Periodic labor-market surveys cover eighty geographical areas and gather data on wages and benefits for white-collar, skilled-maintenance, and certain other nonproduction jobs. The division also makes wage studies by industry. These are broken down by area, size of establishment, and other criteria.

It reports, too, on salaries for professional and technical personnel. Published monthly is a report on current wage developments in major union situations in selected industries. The division analyzes union constitutions, contracts, memberships, and union wage scales. It reports on work stoppages and breaks down employer expenditures for paid leave and other supplementary remuneration.

The *Division of Industrial Hazards* publishes quarterly reports on injury-frequency rates in 16,000 establishments in 140 manufacturing industries. The results of these studies help companies measure their injury rates. Yearly studies of frequency and severity on an even broader scale are also prepared by the division. ♦

NATIONAL TRADE ASSOCIATIONS have grown faster than business establishments or the population, notes the *Business Service Checklist* of the U.S. Department of Commerce. From 1940 to 1960, while population increased 37 per cent, the number of business firms rose 42 per cent and national associations of businessmen 48 per cent, from 1350 to 2000. There are also 3000 state-regional groups and 8000 local bodies of businessmen.

Getting the best results from SIMULATION

By Winston C. Dalleck

Condensed from Business Management

WITH A COMPUTER and a method called "simulation," a company can:

- Pretest its business decisions before committing itself to a final course of action.
- Solve potential problems before a real crisis develops.
- Determine which of a number of alternative actions will yield the best results in terms of profit, cost, or competitive position.

Simulation consists of building a model of the company (or system or operation) that reflects actual operating conditions. This is then programed for a computer. The model may be a set of linear equations or a series of statistical relationships. If mathematics is insufficient to describe a business operation, it can be supplemented with diagrams, flow charts, and descriptive word statements. The accuracy of the model as a faithful replica of the operation determines how useful it will be for decision-making.

Once the model is programed into a computer, a manager may then feed in changing conditions or proposed decisions and test out their effects. By measuring these effects against cost, feasibility, and other relative yardsticks, a manager can obtain a clearer picture of the best alternative or set of alternatives.

Simulation works best for complex problems involving subtle interrelationships difficult to visualize and measure. It is most applicable when the cost and profit implications of a given move are large and when the mass of information needed to make a decision can be quantified, put into numbers, or set within limits.

Large organizations offer the best opportunities for simulation, since its techniques tend to run up large bills. Results from tests may take a long time to apply, since the proof of their value is often difficult to see at all levels of management.

Smaller or medium-size companies, however, are often able to

Business Management (October, 1961), *© 1961 by Management Magazines, Inc.*

apply simulation techniques much more quickly than the giants. For example, at a total cost of $10,000 for outside assistance and the use of a rented computer, one medium-size sales chain was able to save $200,000 in a year's time through inventory reduction.

Simulation is now being used for important long-term policy decisions. It is here that it yields the greatest payout. But it is here, too, that it runs into the greatest stumbling blocks, partly because these areas are the most difficult to simulate and partly because of some major barriers.

Time and Money

One barrier is the expense of simulation studies, in both time and money. For example, a large transportation company decided, after preliminary studies, to build a simulation model of its maintenance activities, with an eye to improving operating costs and scheduling. The study was set up to run two months at a budgeted cost of less than $10,000. Actually, it ran two years, and cost $100,000. But the company achieved a yearly saving of more than one million dollars in operating costs, as well as increased income from more efficient use of its equipment.

Another barrier is the lack of management understanding of computer-simulation tools. Some executives doubt the effectiveness of these techniques, others view them as a threat, and many are wary of the considerable amount of abstruse mathematics involved in simulation and model building.

In addition, simulation experts often defeat their own purposes. When they try to explain their activities to executives, they often slide into jargon or run out of language; as a result, they may oversimplify drastically. Executives may see the oversimplified examples given to them and study the simple relationships and conclusions offered, then come to one conclusion: The experts are making the obvious seem difficult.

Most line executives also realize that a simulation model is only as good, or as realistic, as the assumptions built into it. There are many instances where operations-research people have missed the boat by failing to define a problem accurately and build a workable, useful model. This has led to skepticism on the part of management.

Breaking the Barriers

Many companies have broken the barriers and are making effective use of model-building techniques. Some of these companies follow a simultaneous program of application and education. Rather than undertake vast over-all studies, they concentrate on well-defined, short-term projects that give fair assurance of an immediate and discernible payout. Meanwhile, they devote much time to getting this successful

program understood and backed by other levels of management.

Some companies educate their top management through rigorous, comprehensive in-plant training sessions conducted by the company operations-research men and/or competent outside specialists.

One large company, following a still different technique, put on a "road show" to tell to its employees the successful story of its first attempt at simulation. All personnel concerned in any way with decisions stemming from information provided by this model were given a complete review of the project. They were told clearly, in a numerical and graphic way, how the model worked; what input data were required; what the output information looked like; what part the computer played; and how these results would be used.

Still another technique—management games, using a computer—can be useful for introducing managers to the concepts and potential of simulation.

Snarled in the Grapevine

Simulation experts point out another pitfall: During the development and testing of a computer model, only a limited few can be involved in the details. But the general nature of the work usually becomes known throughout the company via the grapevine. Not knowing the full story—and because of the implications and overtones of automation and its effects on jobs and responsibility—many company personnel become curious, anxious, even resentful of the expected outcome of the project. By frank and complete discussion of the simulation work, management can counter these effects of the grapevine.

While there is no one sequence of steps a company can follow to assure effective results in using a computer to simulate business problems, there are some guides:

- Start modestly. Pick a project with high payoff potential and a good chance for successful completion. If this project works and other opportunities for simulation exist, management can then move to a more difficult project.
- Get help. Use outside skills and outside computer time, if necessary, to begin with.
- Educate. Familiarize personnel throughout the company with the methods of operations research, and give those who will conduct simulation projects thorough training in computer know-how.

Simulation is not a cure-all. In many situations, other methods of problem-solving are quicker and more economical. In areas of personnel and organization planning, for instance, the inability to quantify facts makes simulation impracticable. And even when it can be used, simulation is often costly. The key to its most profitable use lies in utilizing it in areas where it offers maximum return. ♦

When Computers Feed Back Problems

■ S. A. Spencer

McKinsey & Co., Inc.

• A major transportation network invested fifteen man-years of programing time to eliminate the work of thirty clerks, only to learn, when the system was put into effect, that extra editing and punching costs used up half of the anticipated savings. Moreover, they found that a two man-year investment of programing time in another department could have saved more than half a million dollars in operations scheduling.

• The management of a southern mill, after spending two years converting its inventory to a computer-based system, discovered that they had overlooked many other applications in production control, instrument-reading analysis, and other procedures. They are now forced to strip out the computer and reprogram inventory for the larger computer they are installing to handle all these applications—and they are contemplating a three-year setback in their computer development.

• Even while the manufacturing vice-president of a New England appliance company was planning to shift from assembly to manufacture of components, a half-million-dollar computer production-control system was being developed. The system proved completely inadequate when these manufacturing plans were announced just after it went into operation.

A MANAGEMENT REVIEW SPECIAL FEATURE

• The new controller for an international oil company discovered that thirteen computers of different makes, using different systems, were installed in the once-decentralized divisions of his company. Not only were the combined rentals thrice the cost of the two large computers that could have done all the work, but he was faced with trying to extract comparable and significant figures from thirteen different local systems.

When computers feed back such problems as these, the fault sometimes lies in technical shortcomings within the companies afflicted. But in the great preponderance of cases, the problems can be traced more directly to the role that management played in the original planning and early execution of the computer project.

What Should Management Do?

Every book or article on data-processing makes the strong point that a primary requisite for any computer program is the support, the sympathy, and the participation of top management. The men who say this are not theorists; they are people who have lived through or drawn on the experiences of actual computer conversions. Yet, in spite of this universal agreement, the top management reaction is often either perfunctory agreement or open skepticism. As one vice-president told his data-processing manager, "*Everybody* wants top-management attention."

This is not a surprising reaction, since many systems men do not make clear (and perhaps have not thought through) just why they do need top-management support and, more specifically, just what top management should do.

What is top management's role in the computer effort? To begin with, one kind of management attention is *not* very helpful. Many times a chief executive returns from some presentation about data-processing highly enthusiastic about "closed-loop control," "at-source automation," the "total systems concept," the promise of desk screens flashing up-to-the-minute figures, communications networks linking not only cities but continents, and the like. Inspired by what he has seen and heard, he will order his systems manager to apply computers to the whole company at once. This kind of attention has caused some companies to order computers without knowing what they were to be used for; it has caused others to start vastly overambitious programs that have foundered and failed in the execution.

Five Vital Elements

This is *not* the kind of attention that the computer program needs from top management. Instead, the company's top executives should exert their greatest leverage by seeing that the entire effort is fitted into their company on a sound basis at the very outset. Specifically, they

should influence the company's computer effort so that five important elements are included. They should insure:

1. That the computer study considers the company's over-all long-range plans.
2. That it considers the whole company—not just the most obvious applications in one segment.
3. That the study and conversion program are organized flexibly—not locked into one department.
4. That the study strives to define the ultimate system and considers the whole range of recent advances in the systems and procedures world.
5. That the conversion program, if justified, is planned with care, discipline, and restraint.

These principles may seem too simple and obvious to need emphasis, but the fact is that there has been widespread failure to observe them.

Consider the Future

One of the chief responsibilities of top management is to insist that the computer study take into account the company's long-range plans. Too many computer efforts focus on *today's* needs. It is quite easy for a study group to look at today's order processing, payroll, and scheduling and say, "Well, we can do these on an XYZ computer at the Toledo office." It is much harder to find out what pattern of operation the company expects three to five years away, and in the light of *this*, to decide what kind of computer system should be designed. Study groups are often staffed with people who have habitually been concerned with day-to-day operations and have neither the inclination nor the access to consider corporate long-range plans. Conversely, top managements often regard the tabulating department as a day-to-day activity. Consequently, there are strong built-in forces in most companies that lead them to concentrate on today's situation rather than on their future needs.

A Costly Oversight

This shortsighted view can be expensive. For one thing, the conversion effort itself, whether it be to install a new computer or to bring an old system to a higher level, usually takes two or more years to complete. Some new computers cannot even be delivered until two years after the order. This fact alone should focus the planners' views two to three years into the future.

More important than this, some companies have plans in being that will greatly alter their operations. One defense contractor planned a major switch from decentralized to centralized operations, to occur in two or three years. But while the corporate planning group was laying these changes, the computer group was busily building up local on-site computer services for decentralized divisions. A year of work and

"Every company has some plans, even if they are as informal as an executive-development plan or a capital program. . . If the computer is to help these changed operations, the study must consider what they involve and what kind of volumes are to be handled. . ."

• • •

many expensive arrangements came to nought when someone finally thought to introduce "Mr. Planning" to "Mr. Computer."

Every company has some plans, even if they are as informal as an executive-development plan or a capital program. Such plans point the company toward improved—and therefore changed—operations. If the computer is to help these changed operations, the study must consider what they involve and what kind of volumes are to be handled three to five years in the future. Top management can make a great contribution by encouraging the study group to consider this dimension—and by seeing that information is made available to them.

Consider the Whole Company

Management should also insure that the computer study is company-wide—that the needs of all departments are considered.

In the past, computers have often been introduced by and for specific departments. In one company, the finance department might get a computer for one large routine such as payroll. In another, the manufacturing department might put the parts inventory on a computer. Some companies have simply substituted a computer for their existing punched-card equipment.

The trouble with this approach is that it builds in limitations that are hard to overcome later when the company suddenly sees that it has been sitting on many other opportunities for the computer. Two years ago, for example, one company installed a random-access computer for three applications—all in accounting. Today, additional requests from sales, research, and quality control cannot be served, and the company is faced with the prospect of replacing this computer, reprograming, and upgrading.

Sometimes disjointed effort actually hinders operations. Three fabricating locations of a defense contractor, through separate projects, each installed one computer. But when headquarters wanted to exchange work between these locations to balance capacity, it turned

out that parts coding, shop systems, and programs were so different that this was not possible.

Another consequence of the separate-department approach is duplication of facilities and costs. In an eastern railroad, various equipment salesmen dealing at different times with separate departments have installed a whole range of unrelated equipment at several locations. Today there is so much duplication in costs that headquarters is muttering about ordering out all the equipment.

Combining Efforts

Fundamentally, one large computer will do the work of many smaller ones at much less over-all cost. Hence, whenever a company has a scattering of several small or medium-sized computers, there is reason to wonder about the economics and the effectiveness of its system.

This is not to say that in some cases a company-wide study might not result in the installation of several small computers. But top management should make sure that any computer effort is part of a deliberate corporate program considering the needs of all the departments, rather than an isolated project that may or may not fit into the later-discovered total needs of the entire company.

And, because of its lower volumes and its higher stake in an initial success, this principle is at least as important to the smaller company as it is to the large corporation.

Organize Flexibility

Another area that requires some adjusting from the fine hand of top management is that of organization. Sometimes a systems group will be so constituted and so placed in the organization that it will set its sights only on one or two applications and will not want to look any further.

There is also reason to suspect that the kind of computer a company is purported to need depends more on the person heading the study than on the objective requirements of the business. When an accountant heads the study, a business computer usually arrives on the scene; when an engineer gets there first, a scientifically oriented computer is purchased. This may be all right in some cases, but companies have been known to purchase computers that are totally unsuited for the most promising actual or potential applications.

There are other situations where the systems people will sincerely want to take a broad-gauge, company-wide approach, but will not have the stature, the staff, or the support to do so. We frequently hear such comments as, "Oh no, Jones would blow his top if you go looking into *his* operation," as though this were a full and obvious reason to exclude the department from consideration.

In both kinds of situations, top

management can contribute substantially and change the entire course of events by elevating the computer effort—giving it the strength and independence to take a broad and well-rounded approach.

Useful Features

The specific arrangements required differ in each company, but an organization adopted recently by one United Kingdom company includes some features that have proven useful. This company early uplifted the computer study group so that it reported through an assistant to the president. A task force, consisting of middle management members from marketing, manufacturing, finance, and the two major plants, was constituted to act as a board of directors for the study group; in addition, all departments were asked to designate representatives to the group. The entire effort was announced through the president, and no commitment was made as to the eventual organization of the installation. Such an arrangement leaves the company free to place the computer within an existing department, if this seems warranted, but it defers that decision until the study reveals the most logical spot for the computer. Thus the company remains entirely flexible, with no department allegiance or functional bias skewing its program.

When such provisions have not been made, it is surprising how difficult it is to escape the conditions and uses originally established for the computer. One transportation executive remarked that, although his company had used a computer for five years and had achieved dramatic savings in clerical cost reduction, the real potential from scheduling units had not even been tapped. When asked why, he replied, "Well, that problem lies in the Operations Department. The computer is in Finance." Top management can avoid such situations at the outset by insuring that its organization will not straight-jacket the effort.

Define the Optimum System

Another problem top management must concern itself with is the character of systems development. This field has been advancing rapidly; in fact, there has been a distinct shift in attention from the drama of new computers to advances in their applications.

In business systems, such concepts as "at-source automation," the "total system," and "closed-loop control" are in various stages of development or application, and communication networks, both within one location and linking several distant points, are a separate study in themselves. Moreover, a computer study or the use of a computer can have a profound effect on the management information that is available for running the business.

Viewing these complicated advances, there is a strong temptation,

to which many companies have yielded, to crawl before walking; that is, to think through what seems easiest at first and assume that greater sophistication will be learned later.

But there are risks in this approach. Steps that are taken may not fit into a more advanced system. Or, lacking a definite program for development, advances may never be vigorously pursued after the initial steps have been taken. And it may be costly to operate a system that is not as good as it might be, while waiting to install further advances.

Updating Knowledge

Time does not permit members of top management to appraise opportunities within their companies for new concepts, nor even to keep up with the detailed development of these concepts. But it is possible for top management to expand their computer study to consider these advances. If the company's team has been out of touch with developments in the systems field, a positive and deliberate education effort should be insisted on. For some reason, few companies will give the team they have assembled a basic education in systems and management; usually these groups go right to work on the problem without the required breadth of outlook. Yet much better results come from a team that has had a few weeks or even days of organized exposure to some of the frontier developments, followed by subscriptions, memberships, and seminars to expand and update this knowledge.

Focus on the Basics

A most influential way in which management can stretch the effort is by insisting that the systems talent consider the high-value basic operations of the total business. In some cases, such as in banks, insurance companies, brokerage houses, and utilities, clerical-type procedures are themselves one of the basic "production" processes and take a major share—say, 20 to 50 per cent—of the total cost dollars spent by the business. In these cases, clerical procedures are critical and costly and well deserve the most attention.

But, in the case of the typical industrial company, clerical tasks occupy only 2 to 8 per cent of the total work force. If new information could be developed to help management better control the costs of the remaining 92 to 98 per cent, or to increase sales just a fraction, this would provide dramatic advances far overshadowing any clerical savings.

In spite of the fact that this point seems quite obvious, the greater proportion of industrial efforts concentrate on payrolls, billings, and payables. When a company hires programmers and keeps them in a cell on the side, they usually accept inputs now being generated, and they tend to produce outputs now

being accepted by all. Then, after conversion, the company makes the shocking discovery that nothing has changed.

Management can sometimes completely transform its computer payout by insisting that the effort focus on the basic problems of the business, and that information needs are defined in terms of the real needs of the business.

Defer Conversion Problems

Another important way to raise the quality of the computer and systems effort is to have the study team observe this principle: Never confuse the ultimate system with conversion. Study times have been sliced in half and confusion substantially reduced when everyone has deferred the problems of conversion until they have thought through the final system they wish to convert to. Study teams often tend to reason as follows: "Maybe we can do it this way . . . but, let's see, we have no one who knows enough about that to develop it . . . perhaps we could train Smith . . . but then who can handle his project?" Thus they go round and

"You won't find any condescension in this office, Compton—
I was just a hired hand myself, once."

"The ultimate system should be defined to include complete cost figures. . . [This] makes the design group return to reality if they have left it, yet . . . encourages consideration of the latest advances. . ."

• • •

round, never finishing the thought about what they want for wondering about how they'll get there. Chopping off all discussion about conversion and focusing first on the desired system greatly relieves and clarifies the minds of a systems group; moreover, it usually produces a much more imaginative and advanced system than results when the designers keep cutting back because of their concern about conversion.

This may appear to encourage a blue-sky system, but what seems blue-sky at first blush sometimes turns out to be entirely feasible and practical. Fear of a blue-sky approach should never be allowed to block bold and creative systems work.

However, management should insist on one item that is too often overlooked: The ultimate system should be defined to include complete cost figures. In one company, this meant recasting the operating budgets for the departments that would lose personnel and creating a budget for the new computer department. These budgets, adjusted for expected annual increases, represented very specific moneys that the systems group proposed to save as well as the amount they would have to operate the computer with when the final system was established.

Preparing such costs takes a lot of the blue out of that sky, and it makes the design group return to reality if they have left it. Yet by this approach, top management provides an atmosphere that encourages consideration of the latest advances to enrich the system.

Plan Conversion

To this point, we have considered ways of stretching the effort—stretching it to consider the future, to consider the whole company, to organize flexibly, and to strive for the maximum potential. Now we must consider the antithesis: cutting the effort back—by planning conversion.

This is another area that has received far less attention than it deserves. Many companies elaborately outline what they are going to do when the computer is installed,

but they fail to make very detailed plans for closing the gap between the present situation and the future system. As a result, the path of conversion is so often marked by delays, excesses in cost, and the like that this condition has almost become an accepted rule. We often hear the comment, "Well, every company I know of has exceeded its budget and timetable in conversion; you just can't predict everything."

This point is perfectly true—but the uncertainty demands even more careful, more frequent, and more professional planning and cost control than does a predictable project. It is certainly not a valid argument for abandoning any effort to plan.

One risk in defining the ultimate system is that some people will want to start it all at once. The trouble with this approach is that the entire effort might founder; bugs will appear, not in a few places, but all at once and all over, and the resulting embroilment can set a computer effort back for years.

Steps in Conversion Planning

Here are a few steps that have helped some companies to take a better balanced and more disciplined approach to conversion planning:

1. Assemble information and costs on the ultimate system, including descriptions of the applications.

2. Estimate how many man-years of systems, research, and programming effort are required to convert each application.

3. Rank the applications in their order of value to the company, considering their payout, their demands on man-years of talent time, and their importance as links in a total system.

4. Conduct an inventory of the talent in the organization. This might be accomplished through using tests. Available talent might be augmented by outside hiring, though it is usually best to draw on inside people who know the problems and who can go back to their home departments after conversion.

5. Balance talent available against the time required by the applications.

6. Set up a conversion schedule to apply the talent available to the most valuable applications first. Provide also, in this schedule, for details relating to space, training, publicizing the effort, arranging personnel reductions, receipt of hardware, cutover or parallel operations, and the other required administrative details that are requisite to a smooth conversion.

7. Buttress this schedule by complete administrative control machinery: control over plans, assignments, accomplishment versus the passage of time, and costs versus progress.

8. Finally, make tentative plans for and schedule the remaining applications that were not assigned to the talent pool for the first effort.

These steps, of course, are the

highlights; an actual conversion manual might contain two to three hundred steps, plus guides for the development of the system.

The important advantage of this approach is that it permits a company to scale right back to the one big application it most wanted to tackle—but as the first installment of a larger plan. This means that the equipment on order won't prove inadequate when the next step is taken; it means that the systems team will have objectives waiting for them when they have digested the big application; and it means that conversion efforts will not be interrupted constantly by outcries about applications that were not considered or scheduled.

Changes Are Inevitable

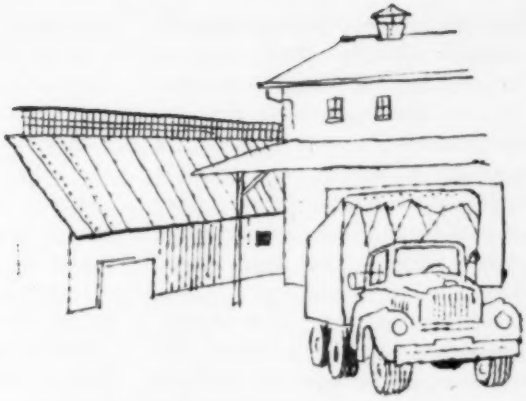
Finally, top management should understand one paramount point about a conversion effort: Any worthwhile program almost invariably requires substantial change—change in the content, format, and accuracy of the forms written by men in the plants and salesmen in the field; change in the processing of these forms; and change in the reports going to the middle- and top-management echelons of the company.

Such top-to-bottom, across-the-company change is very hard to accomplish. A systems group ranked low in the organization and lacking adequate management support faces a hopeless task with little chance of success and high likelihood of wasting money. The conversion group should have access to top management and sufficient support so the entire enterprise is aware of management's determination to effect the advances—and so top management is able to learn about and to resolve any log jams that occur after conversion is under way.

Top Management's Role

Does all this require new skills from management? Not really. Top management should not be overconcerned about the technical aspects of computers; it has not proven hard to train programmers, and the manufacturers ably supply the hardware and the maintenance. But blending this technology with the broad operations of the whole enterprise, now and in the future, requires a rare talent—and this is what top management can contribute.

Although it has a profound effect on the computer's future in a company, the active participation of management does not require too much time from the top executives. Since even with a modest program a company will invest several hundred thousand dollars in the venture—and, more important, since this investment can exert great leverage far beyond its cost on the way the whole business is run—there is strong reason for top management to devote a portion of its time toward making the effort a success. ♦



Cutting Costs Through *Streamlined Distribution*

Condensed from Printers' Ink

A WAVE OF CHANGE has been sweeping over the nation's distribution systems. In the past year it has touched almost every major industry from food to machine tools. Some of its major manifestations are:

- Delivery from producer to customer in hours or one or two days, instead of two weeks.
- Order-filling up to four times a month, instead of once a month or even less often.
- Inventory levels for dealers and distributors cut to half or one-third of their former levels.
- Inventory-taking once a quarter, instead of once a month.
- Automatic order-processing.
- Salesmen's time freed for creative selling in place of routine tasks such as inventory and order-taking.

Although giant strides in the development of transportation and warehousing facilities have been made over the past fifteen years, marketers have learned only recently how to use these facilities at top efficiency—usually with the help of elaborate data-processing equipment.

The changes in distribution pat-

Printers' Ink (September 8, 1961). *© 1961 by Printers' Ink Publishing Corp.*

terns have generally taken three directions. One has been reducing the number of warehouses used by the manufacturer so that order-processing can be handled on a more efficient, mass-production scale. More nearly complete lines of merchandise can be carried in each warehouse, and there is less duplicated inventory.

At the same time, lines of communication between customers, distributors, and the manufacturer have been shortened via electronic order-processing at a central distribution point and telegraphic order transmittal.

New means of transportation—such as piggyback railroad shipments and air freight—are being brought into play. Faster transportation plus faster order-processing usually result in a great speed-up of deliveries, even when fewer warehouses mean that the supplier is further removed from his customer.

Recent Strides

Manufacturers of electronic appliances and replacement parts have taken some of the greatest strides in streamlining distribution recently. Raytheon Corp., for example, now moves its freight to its distributors by air out of a single distribution point in Westwood, Mass.

Two years ago Raytheon was maintaining warehouses for these items (mostly tubes and transistors) in five cities. Salesmen went into distributors' warehouses each month and took inventory, made up their orders, and mailed them to the nearest warehouse. Delivery, by truck or rail, took up to thirteen days. Today, orders are collected automatically on IBM cards and telegraphed to Westwood, where they are processed. Within a matter of hours the delivery is on its way.

Initial Stage

When the system was first installed, salesmen sat down with the distributors for one lengthy session of inventory-taking and order-calculating; now they are freed of these chores except for occasional check-ups. In this initial stage, the salesman went over the previous twelve to eighteen months' sales with the distributor, analyzed sales trends of each item, and set up maximum and minimum inventory levels. Often this resulted in reducing the distributors' total inventory, as some items were dropped. Initiated about two years ago, the system is now in effect with almost all of Raytheon's 700 distributors.

Ordering is virtually automatic. Each case of goods sent to the distributor contains a prepunched card specifying item and quantity. The distributor collects the cards as he sells the goods. Every week or ten days he runs them off on a machine in his warehouse, which transmits the data telegraphically to the Westwood center. He gets his orders on the average of once a week now instead of once a month, with delivery

time usually reduced by five or six days. Raytheon estimates the total savings from the new system (which it calls "Unicenter") at about $250,000 a year.

Thirty-Minute System

Another big job of distribution streamlining is going on at Westinghouse Electric's apparatus-products group. The new Westinghouse distribution center in Columbus, O., receives orders from all over the country telegraphically, processes them, automatically selects the nearest shipping point for an order, and relays the message to that point—all in less than thirty minutes. Deliveries arrive in one or two days.

With the help of its computer center, Westinghouse has been able to cut inventory of one product alone from five million dollars to 2.7 million dollars and has reduced warehousing costs and improved cash flow by at least five days, officials say. In addition, the company has been able to close branch warehouses at a drastic rate, and now ships almost all consumer products from Columbus or another major center in Ogden, Utah.

A few common patterns are visible in almost all the distribution reorganizations. Most involve the elimination of field warehouses, thus reducing the manufacturer's inventory. Most aim to consolidate all the manufacturer's product lines in one or a few central distribution points. This may be done by centralizing manufacturing for all product lines in one location—as General Electric did when it established a huge plant in Louisville, Ky., to manufacture a broad range of consumer products. Or the company may keep separate manufacturing plants for different lines, then bring them together in central distribution points, just as Westinghouse did.

A major goal of these moves is to enable the manufacturer to ship mixed carloads from a single point, instead of shipping less than carload lots from several different points to the same customer.

What do these innovations mean for sales and marketing executives? Generally, sales people can spend more time and effort on creative selling and promotion. Streamlining distribution has usually relieved salesmen of much of their inventory-taking and follow-up chores. It has given them a strong new sales message—improved service. And it has freed them to develop more intense promotional programs and to make more effective use of advertising.

Resistance

Nevertheless, streamlining distribution has met with resistance from some sales executives—particularly where it has meant setting up a special distribution division, department, or manager and taking responsibilities for distribution out of the sales bailiwick.

"Streamlining distribution involves a necessary change in the outlook of sales executives," notes one management consultant. "Formerly they were in charge of many warehouses as well as marketing. When distribution is streamlined, there's no longer a warehouse with each field sales office. There's always a certain resistance by sales people to the removal of these warehouses."

For this and other reasons, most companies still tolerate outmoded distribution systems and are slow in taking advantage of possible improvements. "Too often," says one authority, "distribution functions are left to fall between management chairs or are split up between different departments. Nobody has a clear idea of costs or what could be done to improve them."

In the single area of inventory control, scientific practices are still surprisingly rare, according to a marketing consultant. Relatively few companies have an accurate idea of total inventory costs—costs that are much higher than generally realized. Inventory investment in many companies represents one-third or more of total assets. The annual costs of carrying it average more than 20 per cent of the value of the goods. Yet in a survey conducted three years ago of 76 of the nation's top companies, it was found that only one-fourth used an economic lot-size inventory-control method—considered basic to efficient inventory practices.

The first step for many companies in remedying this situation is to establish an integrated distribution function, with responsibility for scheduling, warehousing, order-processing, and the entire range of distribution functions. Lever Bros., General Foods, General Electric, Pillsbury, Raytheon, and a host of other progressive companies have taken this course—and invariably it has involved considerable realignment of management responsibilities. Integrated distribution, however, is a relatively new management concept, and still has a long way to go until its potential is fully realized. ♦

GOLF CARTS, invented to aid the weary golfer, are moving in fast circles these days, notes *Barron's*. Westinghouse's Pittsburgh security guards drive around in them; so do supervisors at Owens-Illinois Glass and shop stewards at Otis Elevator. The carts are used commercially to tote tools, carry baggage, deliver prescriptions, and sell ice cream. Fleets of all sizes are maintained by auto and chemical manufacturers, electric utilities, missile suppliers, motels, lumber yards, warehouses, retail shops and curb-service snack bars.

Packaging Decisions: How Purchasing Can Help

Condensed from Consumer Packaging

PACKAGING MANAGEMENT has occasionally boxed itself into strange situations. For example:

- Packages aren't available when the product is ready to go, due to a strike, fire, or other stoppage at the plant of the sole supplier.
- Needless additional package costs exist, because marketing was unaware of the supplier's equipment limitations when it approved a new design.
- Costs are completely out of line, because the package is uneconomical in the quantities projected.
- Packaging supplies are ready in one state; the new product is ready to go in another.
- A package idea is developed with a supplier firm that is well known in the trade for its inability to deliver on its promises.

These problems can be avoided if Packaging maintains the proper liaison with Purchasing. The lines of communication, kept open, can enable a firm's packaging policies to be fully realized; closed up, they can cause a complete frustration of marketing objectives.

Trouble Spots

Obviously, it is not the reordering of existing packages that constitutes the major problem. Most troubles will occur when Marketing is considering a radically new package for a new product or the radical revision of an old container.

When a projected packaging idea is still so vague that there is no basis for discussing costs or supplier, the idea is not yet in Purchasing's territory. But when the idea is firm enough to allow intelligent discussion of these points, Purchasing should be posted, and should seek the answers to the following questions:

- Does this package have features that are available from only one supplier, so that a strike, fire, or bad service will put the company in an impossible position? To assess

Consumer Packaging (September, 1961) © *1961 by Haywood Publishing Co. of Illinois*

this situation, Purchasing must know what materials, designs, and components Marketing is thinking of.

- Does this package have cost implications that Marketing has not considered? A designer who switches from a four- to five-color carton anticipates additional make-ready, plate, and ink costs. But if current suppliers have only four-color equipment, there will be additional handling to contend with.
- Which supplier has the development facilities to assist on this design? Marketing is talking about a specific feature; which supplier can Purchasing recommend to help them perfect it?

Necessary Data

Purchasing should also obtain specific information concerning:

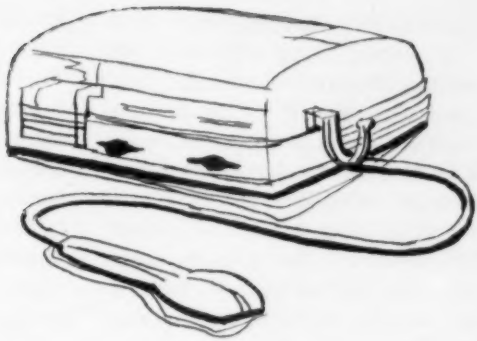
Quantities. Purchasing should obtain market estimates both for initial runs and re-runs; some purchasing men recommend projecting quantities over the first three years. The quantity involved will often determine the supplier—for example, an offset printer or gravure printer. In other cases—as with plastics—quantity and resulting cost per package will help Marketing decide whether to develop a special package or stick to a standard variety.

Location at which the item will be packaged. This is obviously important in multiplant firms. If the product will be packaged in the West, it is economical to buy in the West. Some areas may present more supplier problems than others. Advance information will enable Purchasing to work out such kinks.

Any contacts Marketing has made with suppliers on its own. Marketing men will frequently be approached by suppliers—at conventions, for instance—with suggestions for packaging changes. If Marketing should want to work further with the supplier, Purchasing should know at the outset of the contacts. There are three reasons:

- The supplier in question may be unreliable and consistently unable to meet delivery or quality requirements. Purchasing is most likely to have this information and can steer Marketing clear.
- The supplier may have approached Marketing with an idea that Purchasing knows someone else is better qualified to develop.
- The idea may be a good one, and the supplier reliable. If so, Purchasing can pass the information all along the packaging line—production, engineering, etc.—and start evaluating alternate suppliers. ♦

TWO OUT OF THREE American families are debtors today, reports the University of Michigan's Survey Research Center. About half (48 per cent) have installment debt, one third (31 per cent) have mortgages, and one fourth (24 per cent) have noninstallment credit. Many families owe more than one kind of debt.



Office Equipment: An Embarrassment of Riches

Condensed from Dun's Review and Modern Industry

To RESCUE BUSINESSMEN from the flood of essential paperwork, office-equipment manufacturers in recent years have offered a glittering array of costly office hardware.

The rescue attempts, however, have brought new dilemmas to business. For now, faced with a profusion of office machines, executives must ask themselves: Which equipment should we buy? What is right for us?

The answer can be appallingly difficult to find. Take office-communications equipment. Some 25 major manufacturers, marketing three basically different systems (voice transmitters, facsimile machines, and conveyors) offer a bewildering variety of products.

In the area of voice transmission alone, "walkie-talkie" paging systems are slowly revolutionizing office-to-factory communications. Several vest-pocket receivers, for instance, offer ranges of five to ten miles. Using such a system, a front-office executive can page a shop supervisor in a matter of seconds, even if he is inspecting a remote corner of the plant.

Besides the new pagers, two basically different intercom systems—the interphone and the amplifier-speaker or "squawk box"—are competing for the customer's coin.

Dun's Review and Modern Industry (September, 1961), © *1961 by Dun & Bradstreet Publications Corporation*

Manufacturers have studded them with amazing features. For example, one amplifier tells who is calling and leaves a message if no one answers. Another flashes a light, informing the employee who left his desk that someone called in his absence.

Further refinements, too, confuse the customer. The "squawk box" varies in the number of outlets it can service, depending upon who manufactures it. One model can serve only twelve outlets; another can service up to 48.

Tape, Disc, or Belt?

Even selecting a dictating machine has become a confusing proposition for the businessman: Over sixty different models, at a wide range of prices, are available to the buyer. Tape, disc, or belt? There are arguments for each. And dictating capacity differs widely. One portable model, for example, has a single-use plastic belt that yields fifteen minutes of dictating time. Another model by the same manufacturer uses magnetic tape and has a one-hour capacity. Another manufacturer produces a machine with a reusable magnetic belt that yields fourteen minutes of dictating time. And these are only a few of the available alternatives.

Herbert W. Dean, Eastman Kodak's manager of office services, identifies one part of the customer's dilemma: "The office operates largely in the realm of ideas. The medium you work with is a scrap of paper." How do you measure an idea? How do you measure paper flow? The answers, so far, are obscure. But any company looking for a solution to its paperwork problem must face one fact: A thorough systems study is the indispensable first step. Time and again, report office executives, systems studies in themselves have produced unexpected savings. A survey of office operations, for example, can reveal paperwork bottlenecks and expose short circuits. As a result, judicious pruning and reorganization often can save thousands of dollars. And many such studies reveal that the problem can be solved with no equipment outlay at all.

Decisions, Decisions

Another part of the problem lies in the fact that top management often does not know just what it wants its new equipment to do. Says one consultant: "I have seen members of top management completely snowed under by computer tally sheets they didn't know or understand what to do with. They never had decided what information they wanted, or in what form it should be."

Such decisions, however, are only a first step. If a systems study is to expose the gaps in current systems and then suggest the equipment to plug them, follow-through is essential. Yet many such studies have been halted in their tracks by the opposition of middle manage-

ment, lower-echelon supervisors, and workers.

The reasons are not hard to find. Dr. Ernest Dichter, of the Institute for Motivational Research, cites two common fears expressed by middle and line managers: "Will I become a machine operator?" and "Will I become obsolete?" The latter question, in even more pressing terms, also gnaws at clerical employees.

How can top management counter such fears, as it must in order to realize the benefits new equipment can bring? First, say experienced systems men, it can establish a vigorous communications program explaining the need for a systems study. Second, it must give the people making the study the authority they need in order to make a success of it. ♦

Today's Farm Market

THE FARMER of the '60's is completely different from his predecessor of the '40's or even the '50's, reports *Sales Management*. Today's farmer thinks differently, acts differently, and is motivated differently. As never before, he is a prime market for the widest variety of products and services, not just for his farm but for his own consumer needs. In fact, farm families are now among the best prospects in the nation today for consumer goods and services.

The changing attitudes of the farmer, both as a consumer and as a businessman—as well as the significance of these new attitudes for marketing executives—were recently documented by two sociologists. Doctors Joe Bohlen and George Beal of Iowa State University, on assignment for Meredith Publishing Company's *Successful Farming*, cite several characteristics of the successful farmer who will offer the prime farm market of today and the years ahead:

- The farmer relies on technically valid information, rather than his own past personal experiences or those of neighbors and friends, when he makes a decision.
- He views land, labor, and capital as tools for production, and utilizes them in combination to achieve maximum profit.
- He's confident that he possesses the knowledge necessary to cope with the problems of taking economic risks. And he's willing to use credit and adopt new farm practices because he believes them essential to success in farming.
- He's no longer a victim of circumstances. Today's farmer considers himself a master of his own destiny rather than a victim of a changing environment.

Training and Developing Professional Personnel

Condensed from Personnel Policies Forum

WHAT ARE COMPANIES doing to develop their scientific, technical, and professional personnel? How are they building their reserves of these vitally important specialists? These and other questions were put recently to 148 personnel executives in companies across the nation. Their answers provide a survey of current corporate activities directed at maintaining adequate staffs of scientific, professional, and technical employees.

Once specialized personnel are hired, some form of training program is provided for them by nearly 75 per cent of the responding companies. Among these companies, about 16 per cent conduct formal programs; over 40 per cent conduct wholly informal ones; and both formal and informal programs are conducted by nearly 40 per cent.

Most company training programs consist of on-the-job training, with classroom work often included. Programs may also include attendance at outside schools, job rotation, plant tours, and educational subsidy.

Where do companies conduct their training programs? About half the respondents offering such programs conduct them wholly inside the plant; the remaining half conduct their programs both inside and outside the plant. About 14 per cent of the firms using in-plant sessions maintain their own special training facilities.

Of those companies that use outside facilities for training purposes, about 50 per cent mention colleges and universities. Vocational or technical schools are used by close to 30 per cent, and adult-education courses by 20 per cent. Other outside sources used are technical societies, management-education organizations, and professional or technical seminars and conferences.

Of all the firms providing training programs, close to 60 per cent put a staff official in charge of the program; in slightly more than 30 per cent, responsibility rests with a line officer. In about 10 per cent, re-

Personnel Policies Forum (September, 1961), Bureau of National Affairs, Inc.

sponsibility is shared by line and staff officials.

Educational aid for specialized personnel is provided by 83 per cent of reporting companies. Almost all these firms pay tuition fees; approximately 50 per cent pay the full cost of tuition, and about 30 per cent pay half of it. Educational aid is limited, in most companies, to job-related courses.

Many companies providing educational aid help employees complete their college education; the form of this help is usually full-tuition refunds. Again, in almost all cases the courses must be job-related or at least allied to career development.

Some companies also help out in other ways—for example, by granting leaves of absence or time off, paying for books and fees, or arranging part-time schedules. A few companies restrict college aid to employees with a certain length of service, usually two years.

Career Development

Whether or not they provide training programs and educational aid, all companies surveyed engage in some kinds of career-development activities for specialized personnel. For example, just under half the respondents encourage specialized personnel to obtain professional licenses. In almost 30 per cent of these cases, the encouragement is informal—a talk by the first-line supervisor. Another 25 per cent provide some type of financial assistance—paying the license fees, for example. Time off to prepare for the license examination or to take the exam is given by slightly less than 25 per cent of the companies.

Professional Societies

About 85 per cent of the respondents encourage membership in professional or technical societies. The favorite method for encouraging such membership (practiced by about 66 per cent of these firms) is company payment of dues and/or membership fees. In some cases, companies reserve this treatment for managers, senior personnel, or selected specialists. Other methods include such personal ones as counseling, the example of senior employees, and the suggestion of supervisors; paying travel and dinner expenses connected with society meetings; granting time off to attend, study, or prepare for them; publicizing society news; recognizing participation in society events; and arranging meetings to be held on company premises.

What percentage of respondents encourage their specialized personnel to attend conventions, seminars, and the like? About 92 per cent do so. Here again, the most popular method for encouraging such attendance is paying for the expenses incurred (a practice of 80 per cent of these companies). Underwriting expenses is not a *carte blanche*

affair, however. Many companies attach certain conditions—for example, only those who participate in the program get their expenses paid; only a chosen few may go; the number of attendances is limited; the department head must recommend and approve the attendance; or the person must share part of the expenses. Some other methods for encouraging attendance are to encourage certain persons to prepare and deliver papers, to hold seminars on company premises, or to publicize the events in memorandums, bulletins, or house organs.

Specialists' Needs

What are the most important elements for meeting the needs of specialized personnel? Three are mentioned with about equal frequency: salary (75 per cent of companies), recognition (74 per cent), and opportunities for promotion (73 per cent). In considering the latter two incentives, however, many companies assume that salary also is in line. Fringe benefits and job security are rated as most important by 31 and 25 per cent of companies, respectively.

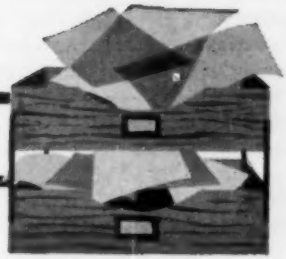
How do companies maintain pay differentials between new and experienced specialized personnel? Among larger companies, the tendency is to rely upon the regular salary-administration program; among smaller ones, the preference is for some type of salary review with merit increases or necessary adjustments. Other methods for maintaining differentials include the use of maturity-curve techniques, industry pay curves, hiring new people below the median rate, withholding bonuses from new personnel for two years, job evaluation, and salary surveys. Generally, the keynote in this area is flexibility, even among those companies with regular salary programs.

Specialization or Management?

A complaint sometimes heard from engineers and scientists is that top salaries are paid only to those in administrative or management positions. Respondents were asked if that was a problem in their company and, if so, what means they used to solve it. Just under half of the larger companies (and 10 per cent of the smaller ones) say this is a problem. One solution (reported by over half of the larger companies and a third of the smaller ones) is the use of two parallel lines of advancement—one for those who move into administrative or management positions and another for those who prefer to remain in their specialty. One large chemical company, for example, has "tried to solve this by also providing in technical departments an avenue of progression for those interested in technical work only." A few other companies mention that their policy is to compensate specialized personnel on the basis of their value to the company or of merit. ♦

ALSO RECOMMENDED

summaries of other timely articles



GENERAL

WHY FIGURES DO LIE ON THE FINANCIAL PAGE. By Donald I. Rogers. *Saturday Review* (25 West 45 Street, New York 36, N.Y.), September 9, 1961. 25 cents. Government economists were once described as dodo birds committed by nature forever to fly backward so that they always know where they have been, but never know where they are going—a view the author agrees with and one that will apply, he believes, until the statistics we use are more accurate and more representative. In his discussion of how various measures, yardsticks, barometers, and indices distort or even obscure the economic picture, he includes the Dow Jones Rail Average, the Gross National Product, the Cost of Living Index, the Federal Reserve Board's index of monthly industrial output, the Consumer Price Index, and the Bureau of the Census' unemployment index.

LINE-STAFF IS OBSOLETE. By Gerald G. Fisch. *Harvard Business Review* (Soldiers Field, Boston 63, Mass.), September-October, 1961. Reprints $1.00. Slavish adherence to the line-staff concept may lie at the root of many postwar organizational problems, according to the author, who states the case for an alternative organizational scheme—the functional-teamwork concept. After tracing the evolution of the traditional line-staff concept, he explains in detail the functional-teamwork concept: Essentially, it gives appropriate weight and authority to all necessary functions; achieves a logical, rather than an arbitrary, separation among these functions; and encourages maximum cooperation and coordination at the lowest practical hierarchical level.

THIEVERY IN THE PLANT. By Irwin Ross. *Fortune* (Time & Life Building, Rockefeller Center, New York 20, N.Y.), October, 1961. $1.25. Over a seven-year period, a trusted buyer for a publishing firm stole $300,000 worth of paper from the unsuspecting company. Although noncash thefts by employees are usually smaller than this, they bulk three or four times as large as embezzlements of money and probably cost U.S. business over a billion dollars a year, the author reports. While employee theft cannot be completely eradicated, it *can* be drastically curbed, he says, explaining such theft-prevention techniques as divi-

Please order directly from publishers

sion of employee responsibility, rigorous documentation of shipments, perpetual inventories, and careful scrutiny of workers' former employment records.

DATA—THE CRUCIAL ELEMENT. By J. H. McRainey. *Automation* (Penton Building, Cleveland 13, O.), August, 1961. Single reprints gratis. Studies of current industrial practices reveal a broad gulf between backward and progressive companies so far as data-handling and management techniques are concerned, according to this article, which emphasizes the importance of efficient data-handling to effective decision-making. The author highlights current trends in data-handling (collection, transmission, storage, retrieval, reduction, and display of data), explains how to set up an advanced data-handling system, and includes listings of major data-handling equipment items and equipment manufacturers.

SPACE. *Business Week* (330 West 42 Street, New York 36, N.Y.), August 19, 1961. 50 cents. A man on the moon is the main target of the U.S. civilian space program—a program that will create new opportunities for industry and the evolution of huge and complex companies, open up a tremendous number of new, highly skilled jobs, and deeply affect the economy. Although the stress on peaceful space exploration assures the NASA the prime role, the role of the defense department is almost as large, according to this article, which discusses the activities of contractors and subcontractors involved in the program.

PRODUCTION

ONE-PAGE SCORE SHEET FOR MAINTENANCE. By Ralph N. Price. *Factory* (330 West 42 Street, New York 36, N.Y.), September, 1961. Reprints 50 cents. A one-page maintenance evaluation device, developed at the Pittsburgh Plate Glass Company, is designed to enable a maintenance manager to determine his current position and compare it with that of previous months and years. It divides management control into five areas of major responsibility—planning and scheduling, work execution, administrative control, cost control, and labor relations; the author explains how to use it, gives an example of a filled-in sheet, and discusses its advantages.

CONTROL APPLICATIONS GUIDE. *Automatic Control* (430 Park Avenue, New York 22, N.Y.), September, 1961. $1.00. Designed to simplify the work of the design engineer in the control and instrumentation field, this annual guide lists components, equipment, subsystem elements, and packaged systems specifically for use in an integrated control system complex. A manufacturers' index lists approximately 2500 American companies and their divisions serving the control field; a control function index and an industrial system index provide further aids.

DEVELOPING A MULTIMACHINE COMPLEX. By J. D. Schiller and H. H. Arnold. *Automation* (Penton Building, Cleveland 13, O.), September, 1961. Single reprints gratis. Two consecutive articles review the development and operation of a computer-controller automated production line at the North Carolina works of Western Electric Company. The first is a study of the organization, philosophy, and technical problems involved in the project; the second shows

Please order directly from publishers

how several operations (automatic product manufacturing; automatic product inspection that provides for rejection of bad products; automatic machine setup when product parameters are changed; and continuous statistical control of production through analysis of inspection data) are combined to produce deposited carbon resistors under the direct control of an on-line digital computer.

CLUTCHES FOR HARD-TO-START LOADS. By Ted Metaxas. *Mill & Factory* (205 East 42 Street, New York 17, N.Y.), August, 1961. $1.00. Smaller, lighter motors may handle even your heaviest jobs if you help them along with modern clutches, according to the author, who discusses dry fluid, hydraulic, magnetic, and eddy current devices as typical of the load-lightening units available to today's manufacturing and maintenance engineers. High inertia, static friction, tension, and winding loads can be easily managed by clutches that provide against starting jolts and shock loads; they permit a motor to accelerate before the load is fully engaged, thus preventing overheating and overmotoring.

INDUSTRIAL RELATIONS

INDUSTRIAL HEALTH PROGRAMS. *Personnel Policies Forum* (1231 24 Street, N.W., Washington, D.C.), Survey No. 61. $1.00. Based on data received from 171 companies, this survey of the industrial health program is limited to the medical services a company provides for the protection and maintenance of its employees' health—for example, emergency medical care, periodic examinations, health education, and consultation; it does not cover paid sick leave or hospital, surgical, or medical insurance. The results are categorized as follows: scope of industrial health programs, industrial health staff, responsibility for industrial health, maintaining health standards, medical absences, health care for executives, and evaluation and benefits. Of the firms surveyed, 47 per cent provide such preventive measures against nonoccupational illness as polio shots, cold or flu shots, and vitamins.

PROFIT-SHARING PUSH. By Jack Hanicke. *The Wall Street Journal* (44 Broad Street, New York 4, N.Y.), September 13, 1961. 10 cents. Roughly 7.5 per cent of all U.S. companies with 20 or more employees share some of their profits with workers, and although most of them are small or medium-sized concerns there have been a number of recent recruits to profit-sharing among major companies, the author reports. In his discussion of the trend toward profit-sharing, he presents the views of both its advocates and its opponents; among the latter are many union leaders as well as company executives, although the two groups have completely different reasons for their opposition.

HOW TO CUT UNEMPLOYMENT COMPENSATION COSTS. *Industrial Relations News* (230 West 41 Street, New York 36, N.Y.), August, 1961. $1.00. During the past 15 years, an average of 5 million jobless workers each year received about 1.5 billion dollars in benefits, according to this article, which offers advice to companies for holding down unnecessary benefit payments and administrative costs. The advice includes these steps: Don't take the state's computation of your rate as gospel; keep tabs on your reserve ratio—i.e., the ratio between what's left in your account after benefit

Please order directly from publishers

payments and your average annual payroll; in rehiring, first take those receiving benefits instead of going out for new employees; pay your taxes on time; and fight for changes in legislation to close loopholes in the law that permit abuses.

THE EXPANDING VACATION. *Fortune* (Time & Life Building, Rockefeller Center, New York 20, N.Y.), September, 1961. $1.25. Ten years ago, only a quarter of manufacturing companies provided three-week vacations after fifteen years of work; today, more than three-quarters of industrial firms do so, according to this article. After a short rundown on the evolution of paid vacations for the rank and file, it discusses different formulas for allotting vacations (a recent study showed that out of more than 400 different formulas among 1800 agreements, 90 per cent determined eligibility on a years-of-service scale). Labor leaders are trying to spread jobs not only by longer vacations, but also by a shorter work week or workday or earlier retirement; which method they stress depends in part on what workers want, in part on where employers choose to hold the line hardest.

MARKETING

MARKETING AS A SCIENCE. By Harlan D. Mills. *Harvard Business Review* (Soldiers Field, Boston 63, Mass.), September-October, 1961. Reprints $1.00. Since marketing laws can be derived in the same manner as the laws of physical sciences, the way is open for marketing to become, more and more, a science, the author declares. Showing how to apply scientific reasoning to marketing, he explains that the purely creative functions of marketing will not be replaced by formulas, but rather that in many operations where trial-and-error efforts have been necessary, marketing men will have the benefit of the same kind of generalized information that guides the work of engineers.

WHY INDUSTRIAL ADVERTISING FAILS —AND WHAT TO DO ABOUT IT. By Warren R. Dix. *Business Management* (22 West Putnam Avenue, Greenwich, Conn.), September, 1961. Reprints 50 cents. The typical industrial advertiser wastes much of what he spends on advertising, according to the author, who explains how to stop the waste and use industrial advertising as an effective, if limited, marketing tool. He cites four causes for the failure of industrial advertising programs: (1) Since industrial marketers can usually succeed without advertising, management does not expect advertising to accomplish much; (2) there is a lack of research to find out whether ads are good or not; (3) advertising as a technology is not understood by management; and (4) as a result of these three failings, a manager with insufficient status is usually placed over advertising.

MARKETING PROFILES OF THE 100 LARGEST NATIONAL ADVERTISERS. *Advertising Age* (630 Third Avenue, New York 17, N.Y.), August 28, 1961. $1.00. This annual report on the nation's largest advertisers tells what they spend on advertising, how they're doing in sales and profits, how their leading product lines and brands rank nationally, what share of the market they capture, and other details. The details include listings of each company's sales and advertising executives, the agency line-up, a rundown

Please order directly from publishers

of account executives serving the various products and divisions, estimates of total advertising and promotion expenditures for advertisers covered, and sales figures for various privately owned companies.

ENGINEERING THE PACKAGE. By Ann E. Ferebee. *Industrial Design* (18 East 50 Street, New York 22, N.Y.), September, 1961. $1.50. Who designed the sardine tin? Who invented the keg-lined beer can, the aerosol can, the roll-on dispenser? The first soldered sardine tin was developed by a Maine canner, but the designers of the other packages are all packaging engineers, according to the author, who says that package engineers, not designers, design the majority of the new structures and closures that come on the market. After discussing the varying functions of package engineers in different companies and the package design services offered by materials suppliers, she calls on package design and industrial design consultants to do more package engineering.

RESEARCH AND DEVELOPMENT

PROBLEMS, TOO, HAVE PROBLEMS. By John Pfeiffer. *Fortune* (Time & Life Building, Rockefeller Center, New York 20, N.Y.), October, 1961. $1.25. Man is a slow, sloppy, and brilliant thinker, while computers are fast, accurate, and stupid, according to the author, who reports on research into problem-solving designed to make machines behave far more intelligently than they do now and to make man think far more precisely. Involved in the research are men who study the human brain and those who design computers; as the former learn more about the fantastically complicated circuitry of the brain, they aid the latter in developing more sophisticated machines—and as machines improve, they provide tools for further research.

THE UNCANNY WORLD OF PLASMA PHYSICS. By John L. Chapman. *Harper's Magazine* (49 East 33 Street, New York 16, N.Y.), September, 1961. 60 cents. In physics, *plasma* refers to the agitated collection of atomic particles created when gases are heated to high temperatures; no longer gases in this state, neither liquids nor solids, they constitute the "fourth state of matter," and present the possibility of an almost unlimited energy source. This article explains phenomena connected with plasmas and discusses some implications: Besides offering many practical benefits—such as supplementing our dwindling coal and oil resources—plasmas may be opening the way to an immense new plateau of scientific knowledge.

SCIENTIFIC AND ADMINISTRATIVE POSITION TITLES AND LEVEL DESCRIPTIONS. By G. J. Wilson. *Research Management* (250 Fifth Avenue, New York 1, N.Y.), Autumn, 1961. $2.00. Men with equal training, ability, and experience may be classified as research chemists by one firm, senior scientists by another, and members of the technical staff by a third. This survey result prompted the Industrial Research Institute to analyze their findings to determine, if possible, a uniform title and level structure for professional R&D personnel. The analysis disclosed a pattern of seven level descriptions and titles (five technical, two administrative) that can help industry to provide uniform, meaningful recognition of the professional growth and status of such personnel.

Please order directly from publishers

SURVEY OF BOOKS

for executives

Using Master Clerical Data

MEASUREMENT AND CONTROL OF OFFICE COSTS. By Serge A. Birn *et al.* McGraw-Hill Book Company, Inc., 330 West 42 Street, New York 36, N. Y., 1961. 312 pages. $7.50.

*Reviewed by Gabe Stilian**

This book, which might alternatively have been titled *A Practical Guide to Office Cost Control,* provides the information used as the basis for the "master clerical data" work-measurement system. It includes a full explanation of how master clerical data are used for measuring office operations and also attempts a reasonably complete coverage of the other uses to which the data can be put. This additional material is highly valuable, for companies using the new system are finding that, just like the M.T.M. applications upon which master clerical data are based, it can yield substantial benefits when used to identify areas where existing methods might be improved. To make their coverage still more helpful, the authors devote a chapter to "What Not to Do" in using the master clerical data system.

However, this particular system is only one of the many available for the measurement of office work. It is important, therefore, to recognize that the book describes a system that, while it has value in itself, must still be compared with other existing systems. Unless the reader is aware of this, he will be unable to determine where the system might properly be applied. There are, after all, a variety of uses to which each of the presently available work-measurement systems can be put in an over-all work-measurement program.

In fact, the authors could have done a better job of showing how master clerical data and the measurement and control of office costs are related to the company's total program. Certainly, the reader should not interpret this book as providing the one and

*Manager, AMA Administrative Services Division.

only answer to office cost control. Moreover, it is imperative that he understand the weaknesses of the master clerical data system and weigh the cost of maintaining it against that of maintaining a simpler one.

Nevertheless, the authors have done a good job in explaining the application of this important work-measurement tool and have taken a practical approach throughout. Though their book does not deal at great length with the control of office costs *per se*, it still appears to be a major contribution to the growing literature on this subject. ♦

Briefer Book Notes

(Please order books directly from publishers)

QUANTITATIVE ANALYSIS FOR BUSINESS DECISIONS. By Harold Bierman *et al.* Richard D. Irwin, Inc., 1818 Ridge Road, Homewood, Ill., 1961. 358 pages. $10.60. This introductory text on the application of mathematics to business problems focuses on the models and related quantitative techniques that have not yet gained wide treatment in traditional business courses. Designed to serve as a connection between these courses and mathematical courses, it couches mathematical explanations, for the most part, in terms the layman can understand.

MANAGEMENT PROBLEMS IN THE ACQUISITION OF SPECIAL AUTOMATIC EQUIPMENT. By Powell Niland. Division of Research, Graduate School of Business Administration, Harvard University, Soldiers Field, Boston 63, Mass., 1961. 336 pages. $5.00. A study of the first step in the automation process—the acquisition of nonstandard, nonconventional automatic equipment—this book describes in detail how 18 plants go about acquiring such equipment. It not only analyzes a number of significant trouble spots in the process, such as debugging, working with equipment vendors, coordinating product design with automatic equipment, and analyzing project proposals, but also offers some suggestions for dealing with them.

MAKE-OR-BUY DECISIONS IN TOOLING FOR MASS PRODUCTION. (Michigan Business Reports, Number 35.) By William A. Paton and Robert L. Dixon. Bureau of Business Research, School of Business Administration, The University of Michigan, Ann Arbor, Mich., 1961. 36 pages. $2.00. This study examines the practical economics of the manufacture and utilization of mass-production tooling in an attempt to help resolve the question, "Is it in the economic interest of major manufacturing concerns to produce more and more of their own tooling requirements, or should there be a leveling off or retrenchment from the present volume of self-service?"

Publications Received

(Please order books directly from publishers)

FOOD FOR AMERICA'S FUTURE. McGraw-Hill Book Company, Inc., 330 West 42 Street, New York 36, N.Y., 1960. 167 pages. $3.95.

FITTING YOURSELF FOR BUSINESS. (Fourth Edition.) By Elizabeth Gregg MacGibbon. McGraw-Hill Book Company, Inc., 330 West 42 Street, New York 36, N.Y., 1961. 403 pages. $5.50.

SUCCESSFUL RETAIL SALESMANSHIP. (Third Edition.) By O. Preston Robinson, Christine H. Robinson, and George H. Zeiss. Prentice-Hall, Inc., Englewood Cliffs, N.J., 1961. 467 pages. $7.95.

GRAPHIC CHARTS HANDBOOK. By Anna C. Rogers. Public Affairs Press, 419 New Jersey Avenue, S.E., Washington 3, D.C., 1961. 189 pages. $6.00.

1961 CANADIAN TRADE INDEX. The Canadian Manufacturers' Association, 67 Yonge Street, Toronto 1, Can., 1961. 1146 pages. $15.00.

PROBLEMS OF AMERICAN ECONOMIC GROWTH. By Bruce R. Morris. Oxford University Press, 114 Fifth Avenue, New York, N.Y., 1961. 279 pages. $2.50.

INDUSTRIAL ACTIVITY AND ECONOMIC GEOGRAPHY. Edited by S. W. Wooldridge and W. G. East. Hillary House Publishers, Ltd., 303 Fourth Avenue, New York 10, N.Y., 1961. 232 pages. $2.25.

AMERICAN COOPERATIVES. By Jerry Voorhis. Harper & Brothers, 49 East 33 Street, New York 16, N.Y., 1961. 226 pages. $4.75.

STATEMENT required by the Act of August 24, 1912, as amended by the Acts of March 3, 1933, July 2, 1946, and June 11, 1960 (74 Stat. 208) showing the ownership, management, and circulation of MANAGEMENT REVIEW, published monthly at Jersey City, N. J., for October 1, 1961.

1. The names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, American Management Association, Inc., 1515 Broadway, New York 36, N. Y.; Editorial Director, Harwood F. Merrill, 1515 Broadway, New York 36, N. Y. Editor, Vivienne Marquis, 1515 Broadway, New York 36, N. Y. Managing Editor, Robert F. Guder, 1515 Broadway, New York 36, N. Y. Business Manager, none. 2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.) American Management Association, Inc., 1515 Broadway, New York 36, N. Y.; Lawrence A. Appley, President, 1515 Broadway, New York 36, N. Y.; Philip Jones, Treasurer, 1515 Broadway, New York 36, N. Y. 3. The known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None. 4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders, who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner. 5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required by the act of June 11, 1960 to be included in all statements regardless of frequency of issue.) 35,900.

HARWOOD F. MERRILL, Editorial Director

Sworn to and subscribed before me this 12th day of September, 1961.

ROSE M. BARILE, Notary Public. (My commission expires March 30, 1962.)

(Seal)

Special AMA Conference and Exhibit . . .

Programed Learning and Teaching Machines

The Ambassador Hotel, Los Angeles

November 15-17, 1961

The use of programed learning and teaching machines by business and industry is rapidly gaining momentum. New programing approaches—and refined techniques in the use of equipment—are making significant contributions to the art of industrial education.

This Special AMA Conference will present the story behind these developments, explain the unique benefits promised by programed education, and demonstrate how this new training concept offers revolutionary opportunities for effective and economical instruction.

Conference speakers are pioneers in the field. They will gear their presentations to specific problems of training, education, and management development . . . describe how these can be solved by programed learning and teaching machines . . . point out where these new educational tools are not effective.

Subjects covered include . . .

- *Basic information about programed learning and teaching machines*
- *Comparative analyses of various programing approaches*
- *The economic and social implications of auto-instruction*
- *Types of teaching-machine applications*
- *Case histories of significant applications of programed learning and teaching machines to industrial training.*

SPECIAL EXHIBIT OF TEACHING MACHINES AND PROGRAMED LEARNING SYSTEMS

At this Exhibit, you will be able to examine and watch demonstrations of various systems and equipment available. Participating company representatives will discuss costs, methods, and the feasibility of applying their services to each individual's particular training needs.

To insure that your company gets the up-to-the-minute facts about programed learning's role in modern industrial training, plan Conference attendance now. To register, write, wire, or phone Dept. M11, AMA, 1515 Broadway, New York 36, N.Y. Telephone JUdson 6-8100.

AMERICAN MANAGEMENT ASSOCIATION, INC.

Q&A on AMA

Q. *We are attempting to recruit a qualified executive for a position on our firm's management staff. Does AMA have any service that might assist us in this search?*

A. Providing reliable help in the field of recruiting or placement is a highly complicated undertaking; detailed knowledge of both the opening and the individual is usually required before a recommendation or even a suggestion can be expressed or implied. Any attempt to furnish thorough, reliable recruiting assistance would be a major diversion of AMA's efforts and resources from the educational objectives of the Association. For this reason, no listings or other recruiting or placement services are maintained by AMA.

If you have any questions about AMA's program or policies, please submit them to AMA's Member Relations Department. All inquiries will be answered promptly. Those questions of most general interest will appear in this feature in subsequent issues of *Management Review*.